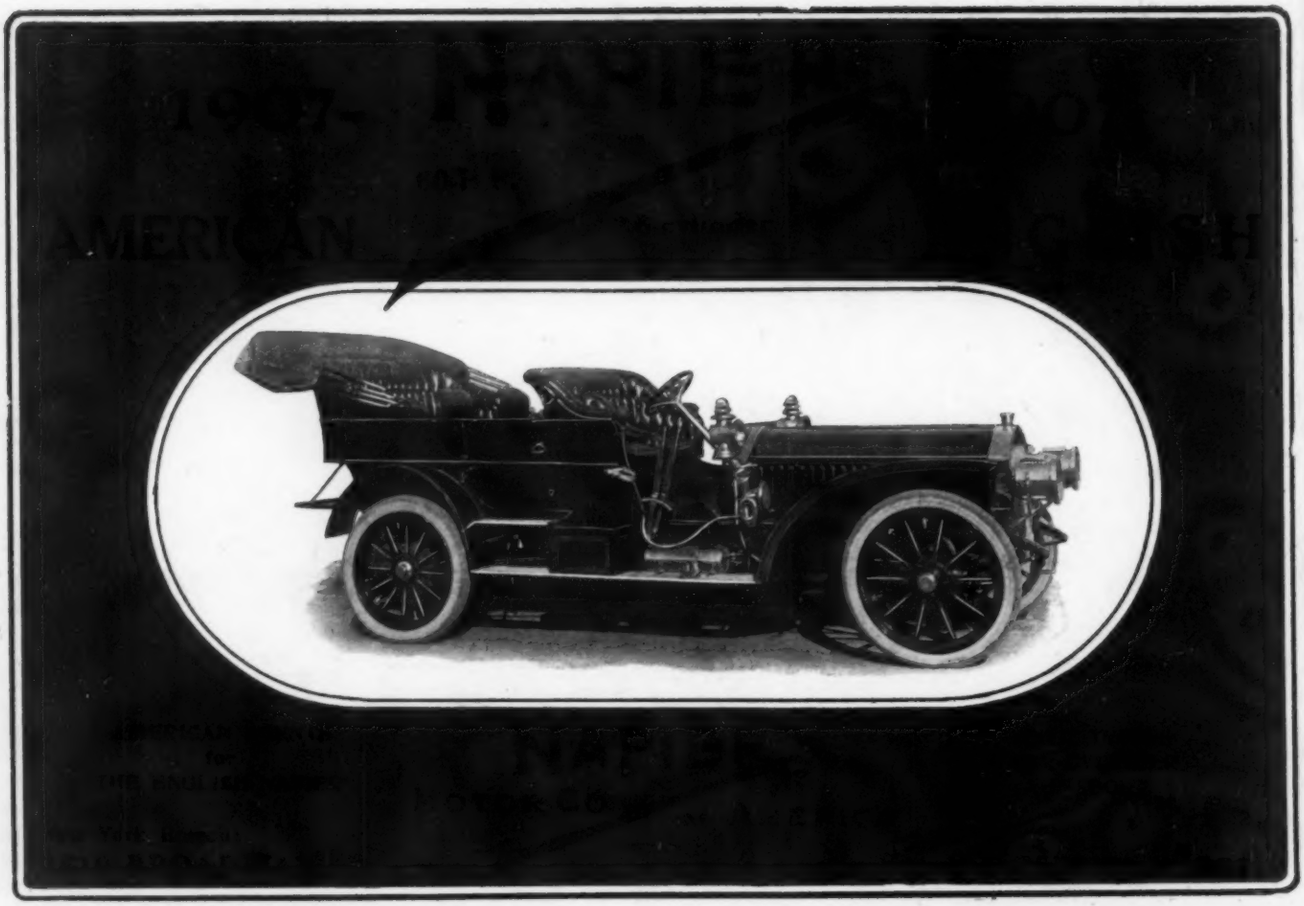
THE AUTOMOBILE

WEEKLY NEW YORK—THURSDAY, JANUARY 17, 1907—CHICAGO 10 CENTS



Mora Roadster

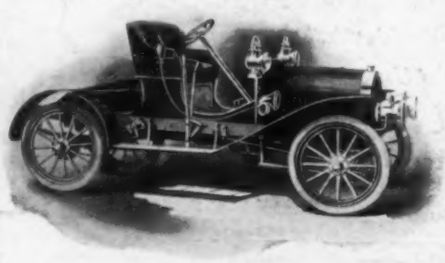
STANDS FOR THE CAR THAT STANDS UP UNDER ALL CONDITIONS

Mora Roadster

TRADE MARK.

EVERY OWNER IS A SATISFIED MOTORIST

Mechanically **Right**



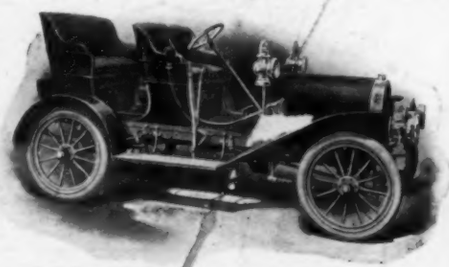
WITH TORPEDO BACK

Mora Roadster

MECHANICALLY RIGHT

Specifications—Four cylinder vertical Engine. 24 horse power, water cooled. 98-inch wheel base; 32-inch wheels. Weight 1700 lbs. Entirely mud proof. Price $1800. Surrey seat $125 additional.

MORA MOTOR CAR CO.
318 Livingston Bldg.
ROCHESTER, N. Y.

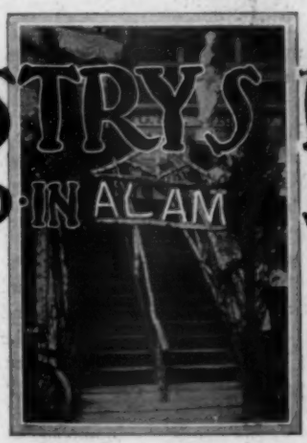


WITH SURREY SEAT ADDED

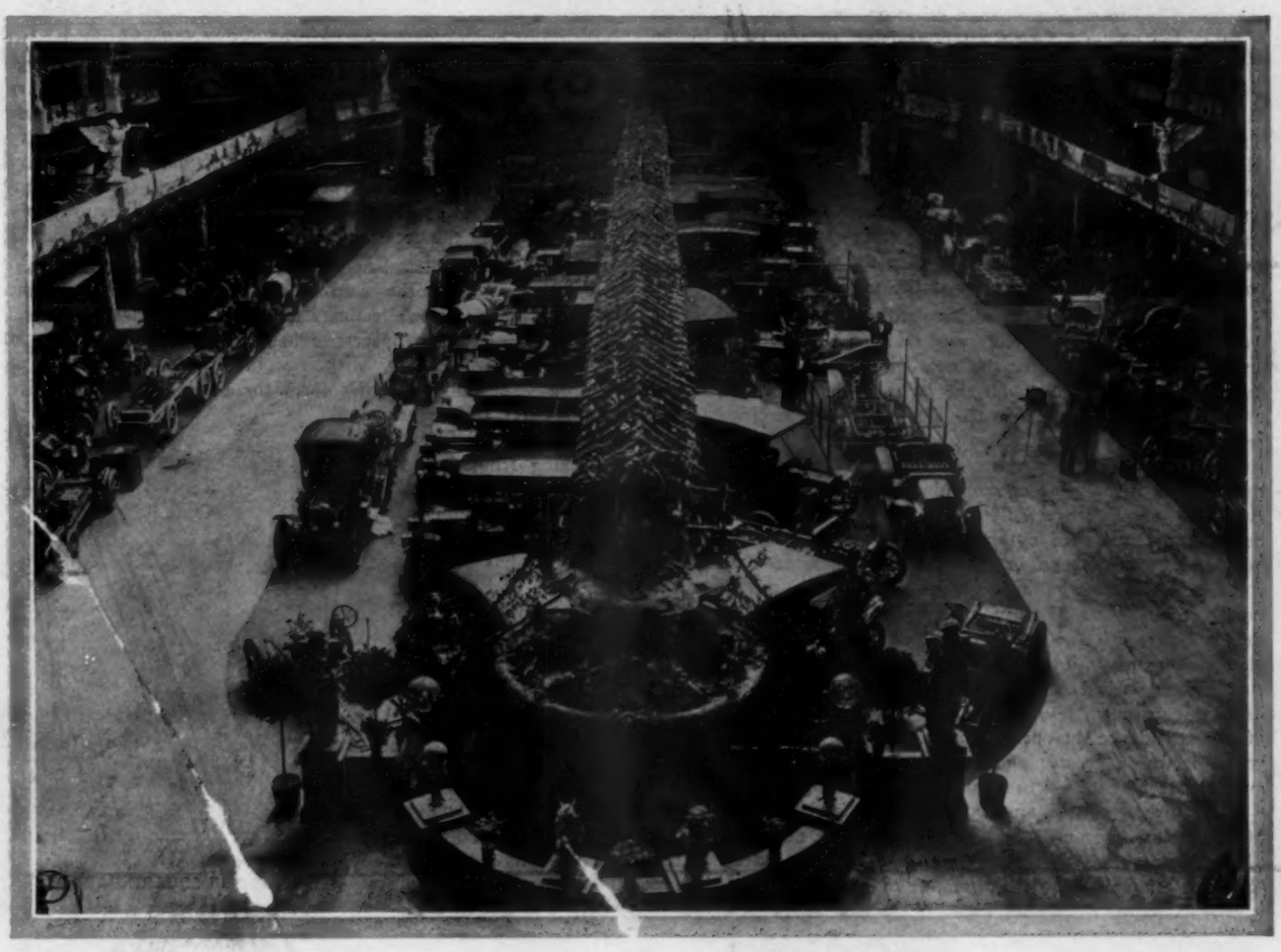
THE AUTOMOBILE

VOL. XVI. NEW YORK—THURSDAY, JANUARY 17, 1907—CHICAGO No. 3

AN INDUSTRY'S PROGRESS AS TOLD IN A SHOW



THE second show of the Association of Licensed Automobile Manufacturers, and the seventh affair of the industry in Madison Square Garden, tells unmistakably, substantially, and artistically its own story of gratifying and unexampled progress. It is an exhibition that bears all the imprints of a successfully established industry—an exhibition that yet betrays the earmarks of youth and still gives evidence of its lusty growth. It should be mentioned here, thus early in the report of the A. L. A. M. show, that its experienced pioneers do not compose all the automobile makers of the country, for scarcely a month ago the American Motor Car



PRESS AGENT JERVIS,
Who "painted the lily" and "gilded refined gold."

Manufacturers' Association supplied the greater part of another notable exhibition of the industry which the Automobile Club of America conducted in the Grand Central Palace. In realizing the magnitude of American automobile manufacture, the total must be that of two shows held in the two largest buildings of the metropolis; and in this connection comes the wish for a mammoth structure that would house all the makers and present the American show in such manner that it would surpass the famous Paris Salon, with its elaborate decorations and roomy spaces. And the Salon includes the makers not alone of France but of Italy, Germany, England, Belgium and Switzerland; therefore the American magnitude excels that of any other single country.

New York has had six automobile shows in the Garden before, but the A. L. A. M. committee, consisting of Chairman George Pope, M. I. Brock, C. R. Mabley, and Secretary M. L. Downs, completely met the metropolitan appetite which had been whetted by the previous events of like character. Great things had been promised for this 1907 affair, promised early in the season before its predecessor had totally faded from view, and so something which would totally eclipse everything that had gone before was looked forward to.

Nor did the realization fall short in any detail of fulfilling expectations. Promptly at 8 o'clock, Saturday night, the show, which had been open for two hours before that time—if the number of visitors interestedly taking in the details of the many cars exhibited may be taken as a criterion—was formally thrown open to the public. Nearly an hour later, to add éclat to the occasion, came the representatives of foreign powers, among them being Baron Mayor des Planches, the Italian Ambassador; M. de la Fosee, counsellor of the French Embassy; Lieutenant Commander de Blanpré, naval attaché of the French Embassy, and M. de Thal, the Russian Ambassador. But the thousands who had come to pay homage to the Automobile and who were content to take their turn in slowly circulating around the all too narrow aisles in order to get an opportunity to see the different exhibits, did not have to be told that the show officially was "open." Their arrival had opened the exhibition.

Despite the gloomy and rain-soaked condition of the outer world, the Garden was a picture of many colors that proved too strong a drawing card for the weather man to counteract, and thousands poured in through the large double doors—hesitated momentarily to fully take in the details of the magnificent conception that towers twenty feet above the floor, and went either side of it to fulfill the purpose of their mission, the splashing of the fountain forming an accompaniment to the myriad footbeats. And the sight that greeted the eye was one of completeness in detail, one that lacked nothing to make it complete, not a gap here and another there, but long lines of polished chassis and complete cars, with nothing to indicate their identity but the inconspicuous signs of their makers above them, the cars and the panorama of Swiss scenery behind them blending so completely as to make it seem as if the cars were in their natural element and lacked nothing but drivers. So far as the crowd itself is concerned, it only remains to say what has been said of the attendance on opening nights for the past two or three years—it was a greater and more enthusiastic crowd than has ever before lent its aid to inaugurating an automobile show.

If the success of such an event is to be judged from the beauty of the picture presented by the tout ensemble, and by the size of the aggregation that comes to view it, then indeed is the "Seventh Annual Show" the greatest of its kind, for neither in the elaborateness of its conception nor in completeness of advanced preparation, despite the vast amount of work that had to be condensed into a very short space of time, was there anything left to be desired. Saturday night was not a sort of preparatory view of what the show would be like later in the week, as it has been in former years, but it was a revelation of the complete whole, uncovered as it were by a sweep of the hand. The background of bare walls and columns which have formed the foundation of the setting for the automobile for seven years past are entirely lost on the present occasion in the profusion of decoration. From the thousands of yards of soft yellow that shut out the girders of the building from view, and behind which a myriad of incandescent lights twinkle, to the smallest section of canvas depicting Alpine scenery that serves to cover the walls, not a spot of the bare brick and iron have been left uncovered, the whole blending softly at every turn into a huge panorama that is complete from whatever point it may be viewed. And the realism is greatly enhanced by the effective use of rustic decorative work, which, though employed in large quantities, is as a whole subsidiary to the scheme of ornamentation and does not intrude itself upon the attention.

As for the cars themselves—and after all they constitute the jewels for which this extremely elaborate and ornate setting has been prepared—it is difficult to know where to attempt to undertake a description of the achievements they represent. Occupying the main floor of the large arena are the products of firms whose names have been closely linked with the progress of the automobile in this country ever since such a thing as an automobile industry had its inception—in fact, for a long while they were the American automobile industry. Grouped with them are a number of Europe's most noted makers, so that a comparison of the flower of automobile productions of standards obtaining on both sides of the Atlantic may readily be made—a comparison, by the way, that redounds to the credit of the American maker. Here, in all, are spread out no less than forty-seven groups of cars—the products of some of the largest and best-known factories in the world—in short, a very large portion of the real bone and sinew of the automobile industry the world over. The demand for space in which to show those same products has become so pressing that even the heavy vehicles are no longer confined to terra firma, but some have mounted heavenward to an elevated platform, specially constructed for the purpose, despite their bulk and avoirdupois. Where formerly the accessory maker held sway the great spread of cars is continued.

On the level below the main floor, the horseshoe circuit of the basement, which erstwhile dingy abode of bare brick walls and otherwise uninviting appearance has been transformed so that even those most familiar with it would fail to recognize it at first glance. Holland scenes form the basis of the decorative scheme, and they cover the long walls in panels stretching from floor to ceiling.

In the exhibition hall still another plan of decoration has been carried out, and here the electrics hold forth in all the stately dignity of their luxury of furnishing and lack of mechanism to intrude itself on the vision.

Above them in the concert hall the scene is again transformed, as are also the subject of the exhibits for which the new color scheme

THE MADISON SQUARE GARDEN.

forms a setting. Here an oriental blending of blue, red, and green forms a background for dozens of exhibits of the materials that go to make a car.

Above the elevated platform that has been pressed into service this year to accommodate an increased number of cars, and separated from it by but a step or two, is the mezzanine floor that holds the first of that seemingly endless array of exhibits of accessories. Tier above tier they stretch around the entire circuit of the large building in uninterrupted rows. Taken all in all, it is an achievement in the successful accomplishment of which its sponsors may well take pride.

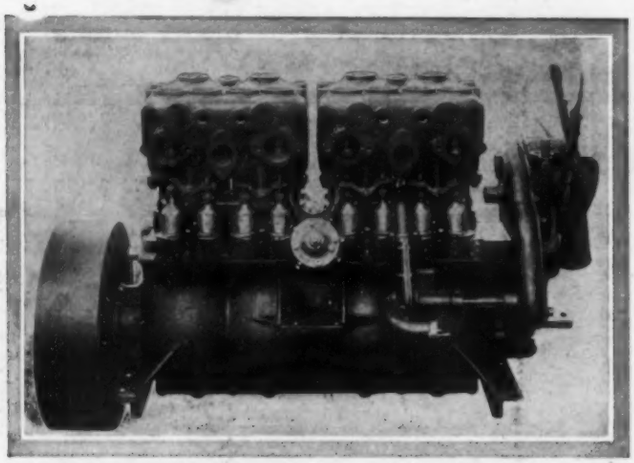
As a standard by which to judge the success of the show from the financial point of view, it may be added that not even the call for a double admission price, coupled with the uncertain weather which continued over Tuesday, was sufficient to cause any marked falling off in the attendance. And that is saying a great deal, for, before the lights are turned on, the Garden is a gloomy enough place on a dark and muggy midwinter day. Still the visitors came to see and admire, and in the evening there was the same crowd of interested spectators taking in the details of the many cars and circulating among the numerous lesser exhibits. Whether the doubling of the admission price had the desired effect of thinning the crowd down to those who numbered a greater proportion of prospective purchasers than has been the case on ordinary nights, as was presumably the intention of the management in making this innovation, cannot be said, but, judging from appearances, it did not have an unusually perceptible effect in lowering the attendance.

NEVER BEFORE HAS MADISON SQUARE GARDEN BEEN GIVEN SUCH AN ELABORATE DRESS AS FOR THE SECOND SHOW OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS.

THE AMERICAN CAR AS PRESENTED BY THE SHOW

By C. B. HAYWARD.

AMERICANS are prone to exaggerate the merits of anything that bears the stamp of the eagle; much given to overvaunting their prowess and their achievements in every line of endeavor, whether it be one they have had long experience in, or something of recent adoption. Such is the trend of foreign opinion of the things that are said of the products sent broadcast from this country to other markets. Thus the American maker is more than proud of the American automobile and with good reason, while the foreigner, on the other hand, is given to belittling its design, its appearance, the materials that enter into it, and its capabilities, usually concluding with the consoling statement that, in the fullness of time, the American maker will learn how to build automobiles. Truth is seldom a matter of extremes and the present is no exception to the rule, so that the status of the American automobile is neither that of the invisible pinnacle of unapproachable superiority, nor the low level of mediocrity. In view of the stock consolation offered by alien and not wholly disinterested critics, it may well be asked: Has the American maker learned to build automobiles?



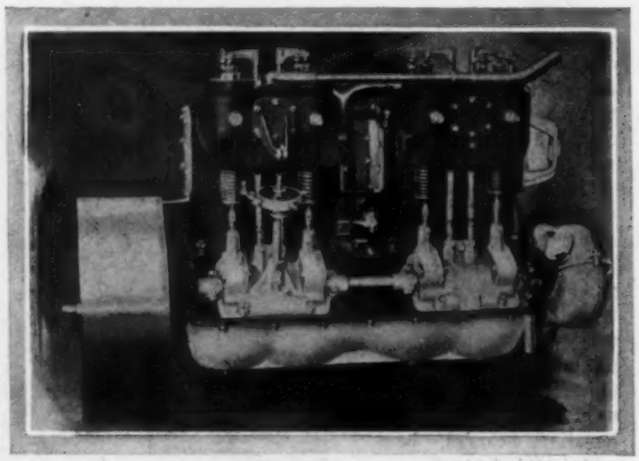
EXHAUST SIDE NEW WINTON 40 HORSEPOWER MOTOR.

With the brave showing spread out in the Garden during the present week, it has not been difficult to formulate an answer. Giving all due credit to the sources from which he has borrowed, and at the same time admitting candidly that he was following the wrong road for some time at the outset, the American maker is certainly entitled to say that he has not alone learned his lesson, but outgrown his teachers. Starting with the very foundation of every mechanical construction—the materials—it does not require any lengthy explanation to impress upon the most casual of observers that this most essential requisite of successful automobile building has been given the attention that its importance deserves and that the metals which enter into the make-up of the American automobile are those which long investigation in the science of metallurgy has shown to be the best adapted for the purpose. The steels that enter into the frames, axles, transmissions, and minor parts and the iron used in casting the cylinders have been selected for those qualities which analysis and experience have shown to be requisite if that high degree of efficiency and smoothness of running, which are the aim of every builder of high grade cars, are to be attained.

Detailed Execution and Workmanship.

America has long stood preeminent as the home of metal-working machinery of the most advanced type, as well as methods of operation and shop practise best calculated to produce the desired result, so that in taking up the manufacture of the automobile the domestic maker was but turning his talents to a rôle in which he was already well-versed. It is a matter of common knowledge that large quantities of machine tools of American origin are employed in the manufacture of cars abroad, so that in this respect at least, the American maker had the start of his over-sea competitor from the beginning. To realize that he has fully profited by his advantage, it is only necessary to note the quality of the workmanship that characterizes the American car as represented in the show—not the polished exhibition chassis which is a mechanical work of art requiring several times as much pains and labor as are expended on the ordinary stock car for its execution, but the car which is delivered to the purchaser. Clean, smooth cylinder castings, free from flaws of any kind, accurately turned flywheels, close-fitting gear and crankcases—an ensemble of painstaking design that would have elicited unbounded admiration could it have been suddenly revealed a few years ago alongside the work of that day, but which in the meantime has come to represent a standard of finish common to even the lowest-priced cars, so that its prevalence no longer arouses any comment.

This is but the first impression of a general observation—looking a little further is productive of revelations that only the experienced eye, familiar with what has gone before, can read aright. Slipshod methods have gone down before the steady march of improvement, and what were at best but makeshifts borrowed from past experience in which conditions met with in automobiling had played no part, have had to give way to methods of accomplishing the same thing in a manner specially designed to effect it in view of the service it will be called upon to render. The cotter pin, for instance, was an effective fastening on small parts not subject to unusual stress or vibration, and for that purpose it found a place on the automobile wherever it could be employed. As an example, it may be cited that the old-time valve spring retainer was a split or cotter pin and a common iron washer taken from the stock of the hardware dealer. Now a specially designed retainer with a recessed face to hold the spring properly constitutes a form of fastening, that it takes but a glance to see was made to do the work required of it. The thought of a camshaft with eight integral cams would have overcome the average maker a few years ago; its cost would have been prohibitive and the necessity of such refinement in manufacturing methods, in order to obtain greater accuracy and durability, would have appeared to be a waste of money. Cams were made separately and pinned in place; now the shaft and its cams are a single piece and the former are ground to a minute fraction of an



COLUMBIA 40-45 HORSEPOWER MOTOR FOR 1907.

inch, after which the faces are case hardened. Instances of the same nature might be multiplied indefinitely.

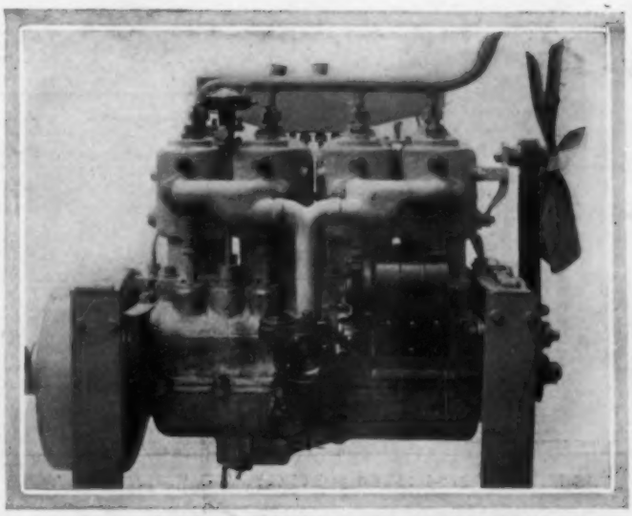
Standards of Motor Design.

It is probably useless to expect that any large body of designers will ever be thoroughly in accord on any subject involving so many opportunities for detailed differences as that of motor design, though years of experience have resulted in evolving a type of construction that is followed so closely in such a large number of instances as to warrant being termed current practise in this respect. Take the matter of cylinder casting, for example, and all the cars in the show may be immediately divided into two representative groups, those adhering to the twin type and those favoring the independently cast cylinder. There are so many things to be said in support of either method that when the advantages and disadvantages are to be weighed in the balance it becomes extremely difficult to differentiate between them. The merits and demerits being thus evenly apportioned, the number to be found ranged on either happens to depend upon which was chosen in the beginning. The matter of valve-placing is another and probably the most prolific source of difference in the case of the different designers. It would be difficult to state just what proportion of them adhere to the opposite disposition of this important essential of the motor, using deep pockets in connection therewith, and how many favor the concentration of the valves on the same side, without taking a detailed census of the cars shown. The matter is further complicated both by those types in which both valves are centered in the head and the entire interior of the cylinder is machined, which is a characteristic of air-cooling practise, and those in which the exhaust valve is placed in the center of the head and the inlet retained at the side.

This, of course, is still further influenced by the type of valve-operating gear employed, and though the majority of designers have retained what may best be termed the standard method as it is represented by far the greater of makers, there is a tendency away from it. This is the direct lift, or push rod, which is a feature of probably 90 per cent. of all the cars shown, whether American or otherwise. In some instances, it has been modified by the interposition of a lever carrying a roller between the cam and the push rod end in order to eliminate the side thrust produced by the cam, particularly that of the inlet with its elongated profile. As a direct deviation from it there is what amounts to a return to one of the oldest standards—that of the rocker arm or walking beam, long a feature of the vertical type of stationary engine, as well as that of the superimposed type in which the camshaft is placed on top of the cylinders instead of along their base. If a leaning there be toward one or the other, where the matter of valve disposition is concerned, it would probably be found to be toward the practise of placing them on the same side of the cylinders owing to the simplification brought about by the elimination of one of the camshafts, although the same end has been attained by the adoption of the overhead type of operation whether by means of rocker arms or directly from a superimposed camshaft, the opposite disposition still being retained and valve pockets done away with. The principle of offsetting the cylinders on the crankcase has come in for considerable attention though its actual advocates are not numerous.

Status of the Motor Accessories.

Though seemingly numerous at first glance, these may be readily divided into the three essentials of carburetion, ignition, and lubrication, and whether taken singly or collectively they are essentials upon which the majority of American cars reveal more of accord than difference. This is true of all three, though in the matter of carburetion there is probably more uniformity than in the other two combined. With but one or two prominent exceptions the water jacket has been considered unnecessary, so it may safely be stated that as a general rule the modern carbureter on the American car is not of the water-jacketed type. In many cases warm air is led from around the exhaust to the vicinity of the carbureter, though the instances in which even this is not considered essential, are far from few.

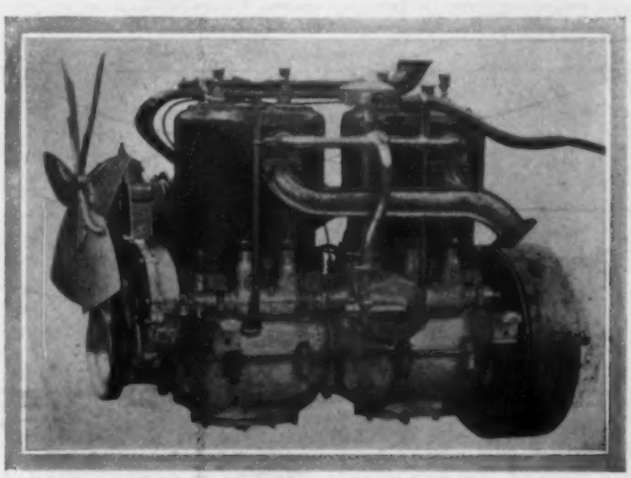


PIERCE GREAT ARROW FOUR-CYLINDER MOTOR.

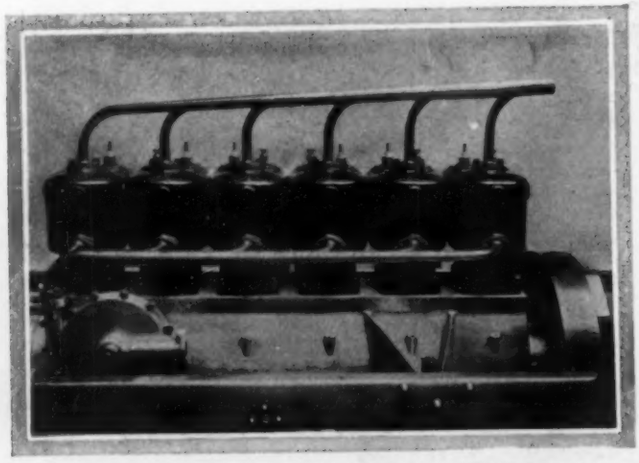
Despite the vogue given the multiple jet type on the other side, which in the end proved short-lived, it found no imitators here, the use of single jet representing practically universal practice. One deviation from this, however, is to be found in the employment of two carbureters of different sizes, fed from a common float chamber, one being employed when the engine is run at reduced power and the other at full load, the same throttle lever actuating both and keeping the larger closed until the smaller is fully open. Another innovation to be found in a carbureter of special design is the introduction of a light fanwheel set directly in the path of the mixture, the suction of the engine causing it to rotate at high speeed, mechanically agitating the fuel and causing the gas and air to combine more homogeneously, as well as preventing the introduction of fuel in a liquid or semi-liquid state into the cylinder. Where the prevailing type is concerned the chief difference noticeable is in the form of auxiliary air valve employed, a few using a piston while in the majority a spring-controlled diaphragm is employed.

Ignition and Lubrication Practice.

Where the first of these essentials is concerned, advancement on the American car has been largely governed by the selling price of the latter. It is a matter of common knowledge that no matter how perfect the ignition system may be, it is subject to derangement and that the best insurance lies in its duplication, but as this involves an expenditure disproportionate to the cost of many of the lighter types of cars, its adoption was not possible



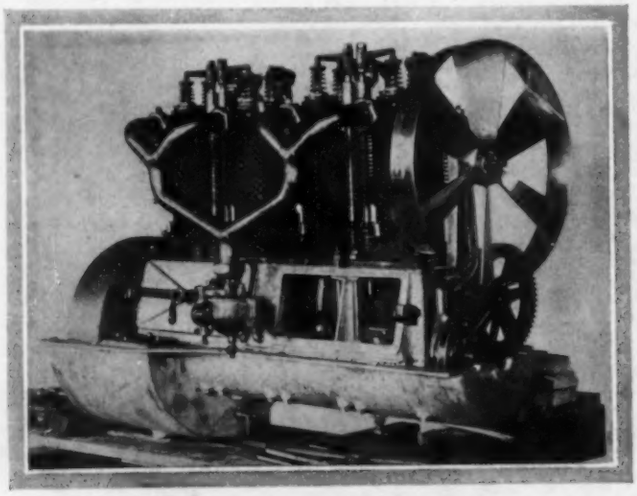
EXHAUST SIDE ROYAL TOURIST 45-HORSEPOWER MOTOR.



THE NEW STEVENS-DURYEA 35-HORSEPOWER "LITTLE SIX."

except as an extra. It takes the form of a magneto system on one side, and an accumulator and coil system on the other, each with its own independent connections throughout as well as separate sets of plugs. This is modified in some instances by dispensing with one set of plugs and in others by employing the same coil as used on the high tension magneto in connection with a special mechanical timer to commutate the battery current which is distributed to the plugs through the high tension side of the magneto. In practically every instance where duplication has been practised both sides are high tension, though there are instances extant in which both high and low tension ignition is employed on the same car. Painstaking attention to the details of coil, accumulator and high-tension cable manufacture together with the extended experience had in the needs of this essential of the car have brought the ignition system of the American automobile to a point where with ordinary care and attention it is no longer the cause of a fraction of the annoyance that it originally gave rise to in the maintenance of a car.

To judge from a census of the motor details of the cars shown, the mechanical type of force-feed lubrication is practically a standard, the advocates of pressure or other types of oil feed being very largely in the minority. The number of independent feeds employed range all the way from two to 14, in some only the most important bearings having a direct oil supply carried to them, while in others even minor bearings ordinarily lubricated by splash are likewise taken care of. The most important exception to this type of lubrication is to be found in the pump-circulating system which is represented by several well-known advocates of its extreme simplicity and reliability, which to a very large extent take the matter of responsibility for lubrication out of the hands of the driver. Though differing in individual instances the system consists essentially of a liberal supply of oil usually carried in a tank in close proximity to the motor, an oil pump and a well at the lowest portion of the crankcase, partitions usually being employed in the latter to maintain the same level under each piston and connecting rod. The overflow from each compartment drains back to the well and after passing through fine screens is again circulated by the pump, this action being continuous as long as the motor is in operation.



CORBIN 24-HORSEPOWER, AIR-COOLED MOTOR FOR 1907.

Transmission, Drive, and Running Gears.

Starting with the first step in the transmission of the power from the motor to the rear wheels, it is noticeable that the tendency toward the adoption of a form of clutch not possessing the disadvantages of excessive inertia and momentum which are inseparable from the use of a clutch of large diameter and weight, has favored the use of the multiple disk type which is now represented to a very large extent on the American car. Owing to its compactness it has made the combination of the clutch and change-speed gear box an easy matter and this practise is noticeable in numerous instances. The size of the latter has been reduced by the more general adoption of the selective method of gear-changing so that instead of the frame being almost filled with mechanism from side to side at this point as was at one time the case, there is now comparatively little, and this is even more noticeable in the case of those cars in which the change-sped gear box and the bevel drive have been combined at the rear axle in a unit, little if any larger, than that formerly necessary for the differential and bevel drive alone.

Where the final link is concerned, it is obvious at a glance that the limit of power to which the shaft drive is applicable has been steadily increasing from year to year so that now all but the cars of the highest powers employ the propeller shaft and live rear axle, with but one or two exceptions. On heavy cars using double side chains, more attention has been devoted to the latter in order that the difference in the operation of the two types due to dirt and wear on the chains should not be so noticeable on the score of noise. To this end, chain cases are now being provided so that the chains may be kept properly lubricated and away from the deleterious influence of the mud and grit of the road. Not less important than the application of the power itself is the means of bringing the car to a stop when necessary and it is noticeable that with the increase in power much-needed attention has been devoted to the braking equipment. It has become very general to center this on the rear wheels, usually taking the form of internal expanding and external contracting brakes applied to a special drum bolted to each driving wheel, instead of causing the braking effort to act on some part of the power transmission nearer the motor, as was formerly the case.

Wheelbases having reached a point where further increases seem impossible, the use of the channel section pressed steel frame has become practically universal. With the frames of lower grade materials, or of built-up types common a few years ago, the weight in the case of the average car would have proved prohibitive. There are still a few exceptions who cling to former methods or special types of construction of their own where this part of the car is concerned, but they are so largely in the minority as to be overlooked by the casual observer unless special attention be called to this feature. Practice where suspension is concerned has undergone little if any change, although it would seem as if the use of the full elliptic spring had found a greater number of advocates than formerly. There are in addition, scattering instances of the employment of the three-quarter spring on the rear as well as the transverse platform type. Wheel diameters have undergone a very general increase, although the largely increased power of the average American car is likewise responsible for this, the small wheels formerly employed looking totally disproportionate to the remainder of the car. Thus wheels have advanced by jumps from 30 inches, to 32, 34, and 36 inches, the great majority now being of the 34-inch size.

WAGNER'S DARRACQ, SHEPARD'S HOTCHKISS, TRACY'S "LOCO." HARDING'S HAYNES AND LE BLON'S THOMAS.

AS THE SHOW LOOKS TO A NEWCOMER

By W. F. BRADLEY.

REARED in the atmosphere of the Grand Palais, with stage master Gustave Rives as instructor in the art of gorgeous decoration, one feels a strange incompleteness on entering Madison Square Garden for the first time. It is, perhaps, akin to the sensations of a Parisian *belle* on being deprived of her richest toilettes, or of a man about town on losing his *maîtresse*. It is useless to argue that neither one nor the other fulfills any useful purpose, and that a chassis on a plain wooden floor is no less a chassis and is much more conveniently examined than the same machine lost among fairy-like decorations costing twice the value of the exhibit. Rives has elevated us—or lowered us, according to the viewpoint—to expect of an automobile show a spectacular display equal to that of the National opera house on a gala night.

Not even the black uniformed ambassadors, flanked by their Swiss guards, strolling through the hall with more dignity than President Fallières and his escort of fussy policemen; not the keen American salesman who has got the finest machine the world has ever seen, and who lets you know it; not even the fair ladies, clad in the best that the Rue de la Paix ever exported, can fill the void. But Rives had he been here would have had a task in making the moderate-sized Garden equal the big Palais.

* * *

"Hello, Wagner, how goes it?"

"O, vous savez, je m'ennuie terriblement ici. They are all right, these Americans; they all come to shake hands with me and I don't know half of them."

"No, I won't have a drink, thanks."

"They give me so many here that my stomach has all gone wrong. This American food, too, you know, isn't bad, but it isn't worth a good plate of French soup."

"They are getting the Cup out," said the Vanderbilt hero, nodding towards a big polished wooden box. "We brought it over with us on the *Bretagne*. It hasn't got my name engraved on it yet, but that doesn't matter to me."

"Will you take your clothes off and sit down here, Mr. Wagner?" interrupted an interpreter in broken French.

"La barbe" (whiskers), said the Frenchman. "I'm not here as an advertisement."

"Those interpreters get on my nerves; I speak as slow as possible, yet they can't understand me. If only there was somebody to speak French to."

"Just sold a car," yelled a round-faced joyous Darracq man, who explained that he had gone into the automobile business because his legs were too short for cycling. "Tell Wagner that."

"Bon," replied Wagner, "you'll keeep a commission for me; I won the Cup."

Close by, on a separate booth, stood the Darracq, the Hotchkiss, and Tracy's Locomobile racer, in charge of an attendant dressed like a Salvation Army man.

"It's the machine that won the cup," said Wagner; "we brought it with us, and are going to run it at Florida, Vevet and I."

"The race don't interest me any more than the show. We shall only run long distances. It's no use trying short spurts against steam. These beach races cannot be compared with the Vanderbilt. No skill is required. You simply open your engine out and let her run."

"Bonne chance, tout de même."

"Merci, au revoir."

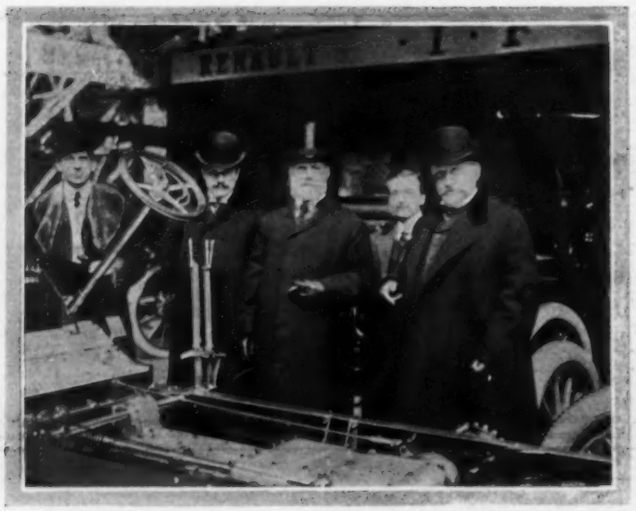
* * *

A few yards further on, at the end of the foreign section, stood the Dietrich Vanderbilt racer, just arrived from Paris. Duray, the intrepid, had been unable to accompany it, and the racer will return to France without making its exhaust heard in the land of the Stars and Stripes.

On the opposite side of the hall, peacefully reposing against a background of Swiss mountain scenery were two American racers; the Thomas on which Le Blon displayed his skill, and the plucky little Haynes, which matched itself against the more powerful flyers.

* * *

To European eyes the American exhibits at the Garden Show indicate enormous activity, for which in two cases out of four, an adequate return has not been obtained. Local conditions have, of course, to be taken into consideration, and objections which hold good in Paris, would fall to the ground in New York. Gracefulness of design, compared with French and Italian productions is woefully lacking in many of the American cars. Front wheels are flush with the radiator; rear seats are well astern of the back axle and appear to have been placed to give the maximum amount of discomfort. On the other hand a number of makers have produced vehicles, which, for harmony of lines, rival anything sent from France. Light two-seated runabouts of sufficient power to travel at a rapid clip over any roads are a fine class. Speaking generally, there is more inventive genius and more variety of design—it is not necessarily all good—at Madison Square than at the Paris Show.



DIPLOMATS INSPECTING THE EXHIBITS.

Baron Edmundo Mayer des Planches, the Italian Ambassador, with Col. George Pope and C. R. Mabley of the Show Committee, and two Italian Embassy attaches.

There is not a wholesale copying of European flyers, as some have tried to make us believe, but rather an attempt on the part of each manufacturer to work out his own salvation. Makers of high-grade touring cars follow more or less closely on European types, but outside these, are numbers of distinctly American cars. Air-cooling, a type practically unknown in Europe, has been brought to a high state of perfection, and there is no doubt that some of the models on view would cause a sensation in France.

Planetary gear, overhead valves, copper water jackets, wooden side frames (on air-cooled cars), flywheels in front, and full-elliptic springs, are all, more or less, American features.

Brakes too often are of the external type, very lightly constructed. On the generally lighter chassis built here, they should, however, be quite up to their work. Very few drop frames are seen, though in Europe this type is commonly employed. Propeller shaft drive appears to be more generally adopted here than in France or Italy, where the practice still is, despite a slight tendency this year towards shaft drive, to use chains for high and moderate power cars and shaft only for small machines. Judging from the bare chassis many shafts are unnecessarily inclined.

Excellent examples of coach work are shown and it is not surprising that imported chassis are frequently fitted with American-built bodies. A number of landaulet and limousine automobiles of American construction vie with anything produced in France, and there is one example of an inside steering limousine body equal to any imported article.

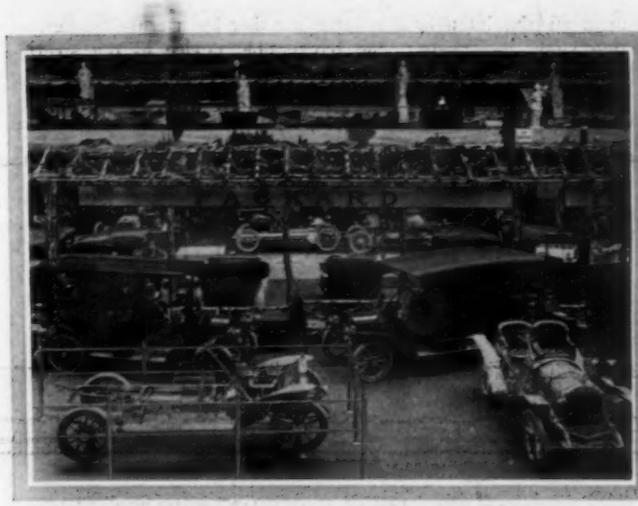
INCREASED PRIZE LIST FOR BALLOON RACE.

In addition to the Gordon Bennett Cup to be competed for at St. Louis, on October 19, several prizes of lesser importance will be offered. The cup winner will receive $2,500 from the citizens of St. Louis, to be taken either in cash or converted into plate. The railroads running into St. Louis offer $1,000 to the aeronaut making the second best record in distance traveled; John F. Hugent offers $750 for the third best distance, and J. M. Schroerer offers $450 for the fourth best record.

A PACKARD ARRIVAL.

It is probable that the Aero Club of America will give a separate cup to the aeronaut who remains in the air the greatest length of time, while the German-born citizens of St. Louis have promised a special cup to the representative of Germany who makes the best record, irrespective of the showings of the other entrants. Frank S. Lahm has sailed for Europe to solicit entries for the race and represent the A. C. A.

SOUTH SIDE OF THE MADISON SQUARE GARDEN EXHIBITS SHOWING STAND OF THE WALTHAM MFG. CO. IN THE FOREGROUND.



A FINE REPRESENTATION OF PACKARD "THIRTIES."

GREAT ARROWS WERE PROFUSELY DISPLAYED HERE.

SOME IMPRESSIONS OF THE LICENSED SHOW

By VICTOR LOUGHEED.

THE 30-35-horsepower Simplex presents a comparatively radical deviation from standard practise in that the cylinders are jacketed with sheetiron jackets, held in place with a multitude of small screws. In this way, all problems of core-sand removal are done away with, and the weight is reduced considerably.

The single C. G. V. chassis on view is one of the number to introduce this year for the first time, the scheme of enameling instead of polishing as an all-over finish. The practical advantage is that rusting is done away with and with it the possibility of injury to clothing from contact with the grease generally used as a protection for the high polish. The chain adjustment is of the eccentric type, which by rotation forces back the radius rods and with them the rear axle. The chain boot used on this car seems to meet with general approval.

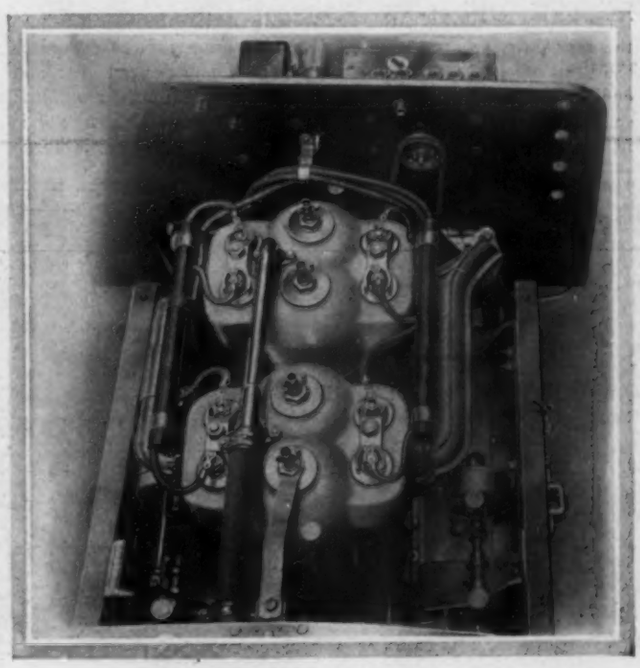
On the Royal cars, there appears a novelty in the distance rods used, which are attached at their forward ends to the frame sides by means of a regulation ball joint, allowing free movement laterally as well as vertically, and providing takeup on the wear that at this point is so apt to produce injurious rattling and pounding.

One of the unusual minor features of design, which, though not altogether new, nevertheless causes comment, is the Packard system of controlling the reverse of a sliding gear system by a separate lever, thus making it practically impossible for the reverse to be confused with any of the forward speeds.

Though the large car of the Northern line bristles with novel features, comparatively few of these features are materially different from their counterparts at the last show. The pneumatic clutch and brakes, the use of the two-to-one gears as the circulating pump, etc., are the same as they were, but the extraordinary rear springs are sure to halt the casual observer. They are 60 inches long, and are supplemented by a transverse platform spring shackled to their rear ends.

An interesting detail that appears for the first time on the 1907 Winton cars, of the more powerful type, from which the well-known pneumatic control is eliminated, is the peculiar inter-connection between the throttle pedal and the throttle lever. This inter-connection takes the form of two geared semi-circles, each like half of a bevel gear, beween which there is held a floating bevel pinion. By this means, if the bevel gear attached to the pedal is in any given position, a movement of the lever will instantly act upon the throttle through the bevel gear attached to it, its fellow constituting a fulcrum. Besides this novelty, the actuation of both valves to each cylinder by a single spring placed between them attracts attention. The transmission brake is equalized by a short whiffletree device, following common practise, but a new idea is shown in the method of equalizing the application of the rear-hub brake through means of a long transverse torsion rod, which readily twists enough to produce the compensating effect.

The Lozier people are among the newcomers to the disk clutch idea. Their show chassis is particularly well finished, and though little about it is radical almost everything about it is interesting. The Lozier commutator possibly is the most striking feature, it



PLAN VIEW OF THE 40-H.P. LOZIER MOTOR.

being mounted upon a vertical pillar and rotated in a horizontal frame by a bevel gear on one of the camshafts. There is only one rotating contact, and this consists of a wire brush which can be removed and replaced in less than a minute, making it practically impossible for an irremediable fault to occur. Chain boots are applied on this car, and the filling nozzle on the rearwardly placed fuel tank projects behind the car at a convenient angle and contains within it a simple gauge for showing at a glance the quantity of fuel contained.

Interest at the Cadillac stand centers around a sectioned working model of the new 20-24-horsepower four-cylinder engine. This model is driven by an electric motor, so that all of its parts and functions, even to the spark within the cylinder, occur as nearly as possible as they would in an operative car.This same 20-24-horsepower car departs from previous Cadillac practise in the use of a sliding change-speed gear, of selective pattern, affording three speeds forward. The show chassis is enamel finished.

Though wooden frames have been Franklin practise ever since there were Franklins, the polished and varnished frame on the show chassis will undoubtedly be the first means of impressing many casual motorists with knowledge of this authoritative use of this construction. Another detail of interest is the modification in the operation of the progressive gear shift. By very trifling changes in the form of the sector notches it is made impossible to go in either direction from the intermediate speed without unlatching, or from the low to the reverse without unlatching, though all other shifts require nothing but a push or pull on the lever.

The Pierce cars maintain their high prestige without slavish adherence to accepted forms, and still display the change-speed gear lever on the steering pillar, are equipped with the interlocking clutch control, and have irreversible steering. The brakes are equalized by whiffletrees wider than the frame, through slots in which they work. A somewhat surprising departure is the elimination of the subframe, Pierce engines now being carried on transverse manganese bronze supports, bolted directly to the main frame sills.

The inclined engine of the newest four-cylinder Knox chassis, permitting, as it does, a perfectly straightline transmission through the crankshaft, the gear-box, and the propeller shaft to the rear axle, seems the best of good engineering, as also does the very ingenious three-point support. Change-speed gear and engine both are mounted upon a massive though light aluminum casting, with an opening in it for the flywheel. The casting is held at the rear by two side arms, while at the front it is borne upon an aluminum bronze cross member by a trunnion permitting slight movement. The irreversible device in the steering gear is interesting because of the quintuple thread and nut.

The star of the Peerless stand is the "Berlin body," which is not like anything ever heretofore seen in this country, but nevertheless looks good. It provides perfect protection for driver as well as for the other passengers and is a most imposing appearing conveyance. R. B. F. annular bearings are used, and a novelty is shown here in that regular lubrication is provided for these bearings by means of small oil boxes and individual leads—a refreshing attention to detail, in view of the more or less current belief that ball bearings don't particularly need lubrication.

The Thomas "Forty" and the Thomas "Sixty" vie with each other in their claim upon popular attention, and are especially worthy of thorough examination, because of the high quality of construction throughout, which absolutely follows the best points of foreign practise, with not a few domestic ideas that take rank with the best of the foreigners. A particular instance of this is the clutch.

Two chief points distinguish the new Pope-Toledo cars—one, the actuation of both valves to each cylinder by a single push rod; and the other, the application of Hess-Bright bearings to the crankshaft. Besides these there is the new multiple disk clutch, the placing of both valves in the cylinder head, and a number of features of minor interest.

Small as has been the growth of the two-cycle idea among the more conservative manufacturers, there is no denying that the two-cycle Elmore, as presented in the form of a splendid working model, driven by an electric motor, "looks good" to the expert and the layman alike. Certainly nothing could emphasize more strongly the absence of valves and other complications, while the answer to any other objections is found in the number of Elmores that are running and making good.

The Oldsmobile four-cylinder car has joined the ranks of those to discard the tubular front axle for the more popular I-beam With this, and at a slightly increased price, the stroke and bore have been both increased a quarter of an inch, raising the power from 28-30 to 35-40.

The unusual idea on the Corbin car is most strongly expressed in the double expanding brakes, a pair in each rear hub, one worked by pedal and the other by the emergency lever. Another feature that is unique is the use of Hess-Bright bearings on the crankshaft ends alone, the other three crankshaft bearings being of the plain type.

WHERE THE AIR-COOLED FRANKLINS REIGNED SUPREME.

AT THE STAND OF THE WINTONS MODEL M PREDOMINATED.

THE PEERLESS WAS EFFECTIVELY DISPLAYED.

LOCOMOBILES MADE AN ATTRACTIVE SHOWING.

THE AMERICAN CARS OF 1907 IN GENERAL

AUTOCAR models for 1907 comprise a complete series from runabouts to limousine and landaulet. One of the most radical improvements is the three-point suspension of the power plant. Motor, flywheel, clutch, and transmission are inclosed in an aluminum housing, bolted together and supported as a unit at three points, two arms from the motor to the side members of the frame, and the third point under the transmission is seated on a stiff spring. This method of supporting the power plant does away with sub-frame construction, lessening the weight of the cars. Motor is now much more powerful, frame is of channel steel, and on Model XIV. the wheelbase has been increased to 112 inches. Road wheels have been increased to 34 inches, metal mud guards are employed, side entrance is wider, there is a light mahogany dash and a new design of radiator and hood with the radiator placed directly over the front axle, giving the car a very rakish appearance.

Apperson.—The entire attention of this concern is devoted to the construction of a four-cylinder, 50-horsepower model with independent cylinders 5 1-2 by 5 inches. Valves are on opposite sides. The engine is water-cooled, a tubular radiator being carried. Ignition is by high-tension magneto and accumulator. The clutch is of the constricting band type, selective change-speed gear is employed, giving four speeds and reverse, and final drive is obtained through side chains. Selling price is $5,000.

Buick.—A 22-horsepower touring car and four types of 25-30-horsepower touring or runabout machines constitute the 1907 Buick designs. The 22-horsepower machine has two-cylinder opposed engine, 4 1-2 by 5 inches, plain bearings, valves placed in the head, water-cooling with tubular radiator and gear pump. The 25-30-horsepower model is a four-cylinder machine 4 1-4 by 4 1-2, cylinders cast in pairs, valves on one side, disk clutch and shaft drive. A special feature of the 25-horsepower machine is the selective type planetary transmission (Buick design).

Cadillac.—Nine models constitute the Cadillac line for 1907. Of these five are made by using different bodies on the 10-horsepower chassis, as follows: Model K runabout, $800; Model M light touring car, $950; Model M with folding tonneau, $1,000; Model M coupé, $1,200, and Model M light delivery wagon, $950. The motor in the above models is the same as the Cadillac company has used in all its small cars and has single cylinder, 5 by 5, copper water jacketed. Pressed steel frame is used, wheelbase is 76 inches. Model H, a 30-horsepower car, will form the leader of the Cadillac line. An entirely new machine is Model G, a 20-horsepower four-cylinder automobile. In designing the new models all distinctive Cadillac features have been retained. Although the three speed planetary gear is still retained on the heavier model for 1907, Model G has been fitted with a selective type of sliding change-speed gear, designed on modern lines. Both the main driving shaft and the countershaft run on roller bearings in steel bushings. This change-speed gear gives three speeds forward and reverse, control being by a single lever operating in the usual H-shaped quadrant, and when the direct drive is employed no gears are in mesh and the countershaft is idle.

Columbia.—Chief among the Electric Vehicle Company's models is a gasoline-electric automobile. The motor is of the standard four-cylinder vertical type employed on Columbia cars with the difference that the flywheel has been displaced by the generator in direct connection with the crankshaft of the motor and hardly occupying more space than the wheel which it displaces. Immediately behind the generator the motor is placed, though there is no mechanical connection between the two on any but the high speed, when the crankshaft of the motor and the propeller shaft terminating at the live rear axle become solidly coupled and both the dynamo and motor run dead. The low speeds, of which there are five forward and a reverse, are all provided by means of a small lever similar to the controller handle on street railway cars. No storage batteries are employed. The low speeds are used in starting, the motor being capable of a heavy overload, and when up to speed a clutch is employed to couple the motor and propeller shafts, the car running exactly as one equipped with the usual change-speed gear. Gasoline automobiles include a standard touring car and a limousine, both of 24-28 horsepower and a 40-45-horsepower machine.

Corbin.—A 24-horsepower air-cooled machine is the sole representative built by this company. The engine is of the vertical four-cylinder type, cast separately and air-cooled by a special system. Cylinder dimensions are 4 1-4 by 4 1-4. Valves are placed in the head, operated by rocker arms. The clutch is of the cone type, there is selective change-speed gear and shaft drive. Wheelbase is 108 inches and weight 2,200 pounds. $2,500 is the list price of the machine, the seating accommodation of which is five persons.

Elmore is the steadfast exponent of the two-cycle principle, all its models at the Garden Show being of this type. They consist of a four-cylinder 30-35-horsepower, with a long wheelbase and luxurious body, selling for $2,500; a three-cylinder 20-24-horsepower touring car listed at $1,750, and a very racy three-cylinder runabout with turtle deck, giving ample space for spare tires, dress case or trunk. Owing to numerous inquiries received relating to the two-cycle principle, the Elmore company shows

a sectional engine run by electricity. Much attention has been paid to the refinement and perfection of small details, these minor changes being responsible for the great increase in power of the new engine over last year's models.

Franklin lines consist of ten models, using three different size motors, 12, 20 and 30-horsepower. Five distinct types are exhibited at the Garden Show: Type G, four-cylinder 12-horsepower light touring car, at $1,850, with sliding-gear transmission, shaft drive and a speed of 35 miles per hour; type D, five-seated, 20-horsepower four-cylinder car, with sliding-gear transmission, three speeds, shaft drive, giving a speed of 45 miles per hour, price $2,800; type H, seven-seated, six-cylinder 30-horsepower touring car, with sliding-gear transmission, shaft drive and giving a speed of 50 miles per hour price $4,000; type G is an $1,800 four-cylinder runabout of 12 horsepower, carrying two passengers and having sliding-gear transmission, three speeds and shaft drive; type J, a light commercial truck, listed at $2,000, develops 12 horsepower, has sliding-gear transmission, three speeds and worm gear drive. No changes have been made in distinctive Franklin features, though improvements have been made in several places. Bodies are more spacious and planned to give greater convenience. The oiler has been removed from dash and placed at side of engine base where it is operated by direct gear. Larger wheels are used, giving greater road clearance, and all models are equipped with new self-finding gear-shifting device. The transmission universal joint block is of new design, the valve action has been improved, and a new style of connectionless intake pipe is used on all models.

Haynes.—The Haynes showing consists of a 50-horsepower limousine, a 30-horsepower landaulet, a 50-horsepower tonneau, a 30-horsepower touring car, and polished chassis of both the 50 and 30-horsepower models. One of the features of the exhibit was the Vanderbilt Cup racers, recently purchased by William C. Thorn, of Chicago. Haynes models have all four cylinders, cast in pairs for the 30-horsepower machine, but independent on the 50-horsepower model. Valves are on opposite sides. Water-cooling is by honeycomb radiator and rotary pump. Ignition is by high-tension magneto and sparking plugs. Drive is by propeller shaft to rear live axle. Roller bearings are employed throughout

Hewitt.—Two different chassis only of the Hewitt automobile are constructed for pleasure use. One, a 10-horsepower single-cylinder runabout or town car; the other, an eight-cylinder developing 50-60 horsepower. The single-cylinder machine is listed at $1,000 as a runabout and has a seating capacity for four. Its mechanical features are disk clutch, planetary change-speed gear and single chain drive. Wheelbase is 72 inches. The 50-60 model has two rows of cylinders forming a V, two pairs on each side. Disk clutch is employed, planetary speed-change gear and shaft drive. Valves are all on one side; water-cooling is by cellular radiator and centrifugal pump.

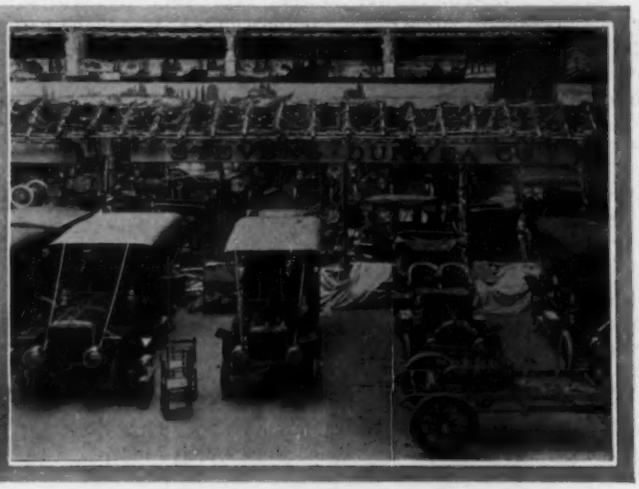
Knox.—A patented system of air-cooling is the distinctive feature of all Knox cars, the model G, of 35-40 horsepower, being the leader for 1907. A complete line of pleasure vehicles is constructed, among them being a stanhope, a distinctly new type of high-powered runabout of light weight, and a new model, H, of 25-30 horsepower. A distinct novelty is an automobile fire wagon mounted on a standard 40-horsepower chassis, carrying chemical fire extinguishers and having accommodations for a number of firemen. Two new trucks with a load capacity of 5,000 and 6,000 pounds respectively, are also a feature of the Knox line for the coming year.

Lozier models consist of a regular 40-horsepower type F seven-passenger touring car, a 40-horsepower runabout finished in royal purple and upholstered in French gray leather, a 40-horsepower limousine and a 60-horsepower touring car. Apart from the chain cases there is nothing of a startling nature, all well-tried features of last year being retained. They include pistons lathe-turned inside and out; crankshaft machined from solid slab of 30-point carbon steel; camshafts made from solid bar; double ignition system with independent plugs for each system, Simms-Bosch magneto supplying current for one with a Witherbee storage battery for reserve. Water-cooling is by two fans, one back of radiator, the other formed by flywheel blades; sliding-gear transmission, four forward speeds, selective type; safety dog and ratchet back-stop device on jackshaft; Hess-Bright D. W. F. ball bearings throughout; multiple disk clutch in oil-tight case; a clutch brake stops motion of gears and prevents clashing. Water-cooling is fitted for brakes, and emergency brake has lever pulling towards operator. A continuous aluminum pan entirely protects motor. Drive is by side chains.

Locomobile.—Two standard models of 20 and 35 horsepower, each of which is fitted with either open or closed body, are exhibited. A distinctive feature of the showing is the number of drop forgings made for the 1907 product. The Locomobile Company has always made its own forgings, but the number of pieces for 1907 is greater than ever before owing to the fact that the facilities of the forge shop at Bridgeport have been increased materially. They range from tiny forgings the size of a door key and weighing an ounce or so to massive forgings for axles, shafts and other large components of the car. The 90-horsepower racer which Tracy drove in the Vanderbilt Cup contest was on view and attracted considerable attention.

Matheson.—Two chassis are produced by the Matheson Motor Car Company. One is of 35 horsepower and the other of 50 horsepower, these two replacing the 40 and 60 models of last year. Four different styles of body may be fitted to each chassis —runabout, regular touring body, landaulet and limousine. The Matheson carries a four-cylinder vertical motor, has sliding-gear transmission and double chain drive. A distinctive feature is the ignition system of make-and-break type with a low-tension alter-

ALL AUTOCAR TYPES FOR 1907 WERE SHOWN.



"BIG SIX" AND "LITTLE SIX" THE ATTRACTIONS.

AT THIS STAND THE TWO-CYCLE WAS KING.

SIMPLEX MODELS OF SMITH & MABLEY.

nating magneto of the Simms-Bosch make as a source of current. Extensive improvements have been made in the carbureter, which is different from that of last year, being new in many respects as the result of close study given this essential. The cylinders are cast individually with integral water jackets and mechanically-actuated valves by a special form of superimposed type of camshaft. A useful device fitted to the machine is a hill pawl by which the operator can stop the car while ascending a grade and hold it without using the brakes.

Northern.—Two distinct models of Northern automobiles are manufactured for 1907. The smaller is a 20-horsepower double-opposed motor carried transversely on the frame, cylinder dimensions being 5 1-2 by 5 1-4. The engine is water-cooled and carries a tubular radiator and rotary eccentric pump. Expanding ring clutch is employed, change-speed gear is of the planetary type, and shaft drive is used. With a touring body this automobile seats five and is listed at $1,700. In the 50-horsepower type the four vertical cylinders, 5 by 5 1-2 inches, are of one casting, with valves placed in the head, using rocker arms. The engine is water-cooled and carries a tubular radiator; clutch is of the compressed-air type, three speeds and reverse are obtained through sliding gears and shaft drive is employed. Seven persons can be carried in the 50-horsepower model, the selling price of which is $3,500.

Olds.—The new Oldsmobile model has a four-cylinder vertical water-cooled motor, developing from 35 to 40 horsepower, of the same design that has proved so successful during the past year. On this chassis three different styles of car will be built, a palace touring car selling for $2,750, a flying roadster at the same figure, and a limousine listed at $3,800. Accessibility has been sought throughout, and by removing the hood the entire motor may be examined. Mechanical features are interchangeable valves, aluminum crankcase and improved piping arrangements. Transmission control and clutch remain practically the same as last year, with a few minor changes. A larger and better equipment has been added, consisting of full set of tools, two acetylene head lamps and well designed luggage carrier. The limousine has received special attention in upholstering and finish; every detail has been well thought out down to speaking tube, electric lights, toilet set, and other small but essential conveniences.

Orient and Waltham Orient.—The models of these lines consist of three types of single-cylinder machines of 4 horsepower, with friction clutch, double chain drive, air-cooled and high-tension ignition; a four-cylinder runabout of 16-20 horsepower, selling at $1,750, and a four-cylinder touring car of 20 horsepower, listed at $2,100, with cone clutch, sliding change-speed gear, shaft drive, wheelbase 96 inches, weight, 1,850 pounds. All Orient models are air-cooled, cylinders, of course, being independent and valves are all on one side.

Packard.—Only one model of the Packard machine is manufactured. It is a four-cylinder 30-horsepower automobile with 5 by 5 1-2 cylinders cast in pairs, valves on opposite sides, water-cooling with tubular radiator and gear pump. The clutch is of the internal expanding type, sliding change-speed gear is employed together with shaft drive. In reality the single model divides itself into two, one being a runabout with 108 inches wheelbase, the other a touring car of 122 inches wheelbase; a handsomely equipped limousine is also shown in the Garden. Mechanical features are identical and the list price, $4,200, is the same for the two, while the limousine sells at $5,500.

Peerless.—Two 45-horsepower models and one 30-horsepower machine are built by the Peerless company. In each type the cylinders are cast in pairs with valves on opposite sides, water circulation being provided by a tubular radiator and a gear-driven pump. Cylinder dimensions of the 45-horsepower chassis are 5 1-4 by 5 3-4; for the 30-horsepower they are 4 5-8 by 5 1-2. Change-speed gear is of selective type; internal expanding band clutch and shaft drive are employed. Wheelbase is 109 inches on the lower power and 114 inches on the larger model. This firm is the only one to exhibit a limousine with inside steering.

Pierce Great Arrow.—A 65-horsepower six-cylinder car is the leading feature of the Pierce line for the coming season. Other types are a 45-horsepower runabout, selling at $5,000, and a 28-32 "Suburban" model. The six-cylinder car of Glidden Tour fame has independent cylinders 5 by 5 1-2 inches, valves on opposite sides, disk clutch, sliding-gear transmission and shaft drive. Wheelbase is 122 inches and weight 3,500 pounds. Ignition is by high-tension Simms-Bosch magneto with accumulator in reserve. A cellular radiator is employed, fed by a centrifugal pump.

Pope-Toledo, Pope-Hartford, Pope-Tribune.—There is a comprehensive list of models from the Pope factories, comprising Pope-Waverley electrics, Pope-Toledo, Pope-Hartford and Pope-Tribune gasoline automobiles. Pope-Toledo models include a 50-horsepower touring machine, at $4,250; 50-horsepower runabout, at $4,250; also limousine, demi-limousine and landaulet. Pope-Hartford lines are 25-30-horsepower touring car, at $2,750; 25-30-horsepower runabout at the same price, in addition to limousine and landaulet models. A Pope-Tribune runabout of 16-20 horsepower is listed at $1,750. An entirely new model is the 50-horsepower four-cylinder Pope-Toledo with multiple disk clutch, selective type of change-speed gear and double chain drive. Wheelbase is 115 inches and weight 2,900 pounds.

Royal Motor Car Company.—Only one type of Royal Tourist automobile is constructed. Rated at 45-horsepower, it carries a four-cylinder motor with 5 1-8 by 5 1-2 cylinders cast in pairs; water-cooled by cellular radiator and rotary pump. Valves are on opposite sides. Change-speed gear is of the sliding type, cone clutch is employed, and final drive is by shaft. Wheelbase is 114 inches. Selling price is $4,000. On this chassis several

types of bodies are furnished, ranging from a simple runabout to an elaborately finished and equipped limousine.

Simplex.—Two Simplex models are presented for 1907. One is rated at 30-35 horsepower, the other at 50 horsepower. In each case the engine is of the four-cylinder type, cylinders 4 1-2 by 5 1-2 for the 30-35; 5 7-8 by 5 7-8 for the 50 horsepower, cast in pairs. Water-cooling is employed, using a honeycomb radiator and centrifugal pump. Change-speed gear is of the selective type, giving four speeds forward and reverse, cone clutch is used, and drive is by side chains. Bronze and babbitt bearings are used throughout. The Simplex runabout is listed at $5,760. Price of the 30-35-horsepower model varies according to body, chassis alone selling at $4,950.

Stearns.—One type of chassis only is made by the Stearns company. Its rating is given as 30-60 horsepower; this is explained by the fact that a special system of carburetion has been adopted. It consists of a small and a large carbureter fed from a common float chamber. On the small one the motor develops 30-horsepower, the larger not coming into service until the small one is fully open. The four cylinders are cast in pairs, their dimensions being 5 3-8 by 5 7-8. D. W. F. ball bearings are used throughout and valves are all on one side. The engine is water-cooled, a tubular radiator and rotary pump being employed. The clutch is internal expanding, the selective change-speed gear gives four speeds and reverse, and final drive is by double chains.

Stevens-Duryea.—This line includes one four-cylinder, developing 20 horsepower, and two six-cylinders, one of them of 35 horsepower and the other of 50 horsepower. On all three models the cylinders are cast separately and are water-cooled through cellular radiator and centrifugal pump. Bearings are plain, valves are on one side and high-tension ignition is employed. Both four and six-cylinder types have disk clutch, sliding change-speed gear and shaft drive. The Stevens-Duryea company is a pioneer in six-cylinder construction. The success which has attended their efforts is shown by the fact that this year they produce two six-cylinder models. Wheelbase of the "big six" is 122 inches, rear springs are 54 inches in length, and front springs 54 inches. With a touring body there is seating accommodation for three persons on rear seat, two on the extra Pullman seats, and two in front. Including a full equipment, this machine is $6,000.

Studebaker.—The chief gasoline car manufactured by this company is a 30-35-horsepower chassis, the features of which are four cylinders measuring 4 1-8 by 5 1-4 inches, cast in pairs, water-cooling, cellular radiator, low tension magneto, cone clutch, sliding change-speed gear, giving three speeds and reverse. and shaft drive. Wheelbase is 104 inches.

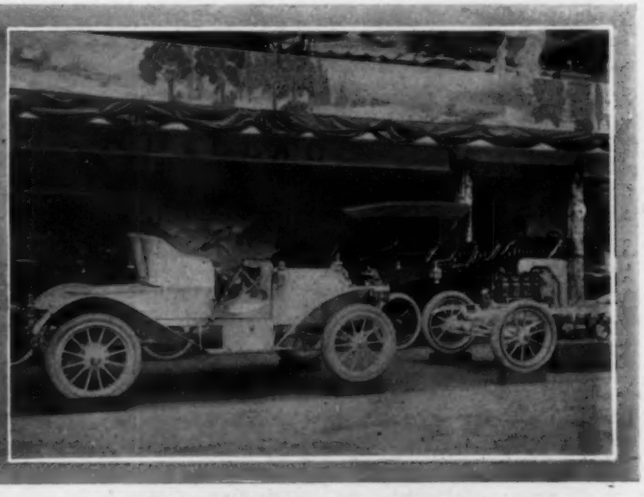
Thomas Flyer.—In general outward appearance the Thomas 60 horsepower flyer for 1907 does not differ materially, with the exception of the changed outline of the radiator and bonnet, from its predecessor of the year previous, though there have been many changes in refinement, simplification and last but by no means, least lightening of the gross weight of the car. The four-cylinder motor rated at 60 horsepower is one of the points on which weight has been saved, yet it has been made stronger and better able to perform the service required of it, due to improved methods of construction. The cylinders are cast separately with integral water-jackets; valves are all mechanically operated, oppositely disposed and are interchangeable. Two separate and distinct ignition systems are fitted, each being of the high tension type and having an independent set of plugs. The current for one is supplied by a Simms-Bosch high tension magneto, while a set of accumulators working through an Atwater-Kent spark generator comprises the other system.

Thomas "Forty."—A four-cylinder engine with cylinders of 4 3-4 by 5 inches, cast in pairs, valves all on one side, water-cooling through tubular radiator and centrifugal pump, cone clutch, selective type of change-speed gear, and shaft drive are the outstanding features of the Thomas "Forty." An interesting departure from standard practise is embodied in the valve operating mechanism rendering the setting of the valves readily adjustable. The suspension is of the semi-elliptic type both front and rear, the latter measuring 52 by 2 1-4 inches, and the former 36 by 2 inches. A pressed steel frame of the usual channel section is employed, with a subframe dropped four inches for the support of the motor and transmission. Two sets of brakes are fitted.

Walter.—This line consists of a 40-horsepower car with cylinders 5 by 5 1-2 and a 50-horsepower 5 1-2 by 6, each with four cylinders cast in pairs. Valves in each case are placed in the head and on the side. Ignition is by high-tension magneto and accumulators in both cases. Each type may be had with either disk or cone clutch, change-speed gear is of the double sliding type, and shaft drive is employed. Wheelbase in each type is 124 inches. The engine is water-cooled, the radiator being of the honeycomb type.

Winton.—Two distinct models are put forth by the Winton Company for 1907, a 30-horsepower car, known as Type XIV, and an entirely new machine of 40 horse power, known as Model M. The chief feature in which the latter differs from its predecessors is in having off-set cylinders, change-speed gear of the selective sliding-pinion type, and a channel section pressed-steel frame in place of the armored wood frame employed on the lighter car last year. The motor of the new car has 5 by 5 cylinders cast in pairs, with water jackets completely surrounding each cylinder. Valves are all on one side. A multiple disk clutch is employed, housed in the same aluminum casing as the change-speed gear. Four speeds and reverse are obtained by the selective type of gear-change mechanism. Final drive is by propeller shaft and rear live axle.

MATHESONS AND STEARNS WERE ELEVATED.



THE GARDEN HOME OF THE CADILLACS.

AT THE LEFT OF THE ENTRANCE TO THE BIG AMPHITHEATER THE EXHIBIT OF FIATS WAS IMPRESSIVE AND COMPLETE.

THE FOREIGNERS OF THE GARDEN SHOW

WITH twelve of the most important European firms exposing at Madison Square Garden, and including such constructors as Renault, Panhard, C. G. V., Bayard-Clément, Darracq, Hotchkiss, Dietrich and Rochet-Schneider from France; Fiat and Isotta Fraschini from Italy, and Daimler from England, the promoters may justly claim to have united the world's best automobile construction outside the United States. In every case 1907 models are shown, and although the booths do not contain an example of every model produced, in all cases the factories' best is on view. As in the case of Bayard-Clément and Darracq, small runabout models are not always handled in America owing to the high duty. European constructors are too much impressed with the importance of the American market not to make a strong effort, despite the difficulty they have in being ready for the Paris Salon, to ship over their new products for exhibition at our national show.

Renault.—Six distinct models are made by the Renault firm for 1907. The 35-45, 20-30, 14-20 and 10-14 have four vertical cylinders; a 10-14 and an 8-9-horsepower model have each two vertical cylinders. In general construction the 1907 models are very similar to those of last year, main features being cylinders cast in pairs, with mechanical valves all on one side, no governor, ignition by Simms-Bosch magneto and sparking plugs, automatic carbureter, thermo-siphon water cooling with tubular radiator forming dashboard, leather-faced cone clutch and transmission by cardan shaft to rear axle. The change-speed gear gives four speeds forward and reverse with a "straight through" lever. A new feature is the adoption of three-quarter elliptic rear springs in place of transverse rear spring previously employed. The 10-14-horsepower two-cylinder machine, extensively employed in European cities for cab work, differs from the larger models in only having three forward speeds. Transverse rear spring is retained on this model. The 8-9-horsepower is but a reduction of the larger type. A self-starter can be supplied with the larger Renault models.

C. G. V.—These cars for 1907 are of 20, 30, 50 and 75 horsepower. In addition a 14-horsepower machine has been designed specially for town use embodying many new features. All models have four separate cylinders with mechanically-operated valves on opposite sides. Ignition is by magneto and sparking plugs, transmission through countershaft and side chains to rear wheels, direct drive on the high gear, and straight-through type of lever. Water circulation is obtained by gear-driven pumps, and lubrication is of force-feed type. Ball bearings are employed throughout. A new feature is the use of chain cases and a special device for regulating tension of chains. The 14-horsepower town model has drop frame, longitudinal C and transverse rear spring, transmission by cardan shaft to rear axle, and driver's seat placed at the left instead of the right-hand side. Levers are consequently in the center.

English Daimler.—The cylinders on this machine are cast in pairs, with all valve chambers on left-hand side and one camshaft accordingly, but a light shaft is fitted on the other side of engine for driving pump and magneto. Engine and gear box are carried by brackets direct on to frame, three-point suspension being employed. Carbureter is on usual lines, but modified to give better proportion of mixture at all speeds. High-tension accumulator-fed synchronized ignition is fitted. The low-tension contact maker and high-tension distributer are set on the top of a vertical shaft at left-hand front of engine and driven by bevel gearing from forward end of camshaft. Water is delivered from the circulating pump to the end of each valve chamber, passes across the bases of the valve chambers, flows upwards around each valve and returns to radiator over crown of combustion chambers. Standard clutch is retained, but is now carried on extension of crankshaft.

Darracq.—These models are very complete. Beginning with a six-cylinder machine, 100 mm. bore by 120 mm. stroke, they descend down in easy stages to small runabout of moderate power. The six, an entirely new machine, is the most interesting of the lot. Its distinctive features are transmission by cardan shaft with double joint between the gear box and motor to rear live axle. Cylinders are cast in pairs, with valves all on one side; ignition by high-tension magneto. Of the light cars there are a two-cylinder 10-12-horsepower and a four-cylinder 16-18-horsepower model, both made with either long or short chassis for tonneau or side-entrance body. There are two models of four-cylinder touring cars, each of 20-28 horsepower, differing only in their change-speed gear. A self-starter is fitted to the larger machines at an extra cost. Instead of change-speed lever being placed below steering wheel, it is now on the side of the car, according to general custom.

Fiat.—A six-cylinder 50-horsepower chassis with self-starting apparatus, a 35-horsepower four-cylinder runabout, and

a 15-horsepower town chassis are the chief Fiat productions for 1907. Cylinders are cast in pairs, valves are on opposite sides, ignition by low-tension magneto, water circulation by centrifugal pump and honeycomb radiator. Ball bearings are used throughout, there are four speeds forward and reverse, with gate type of change-speed gear. The Fiat novelty for 1907 is the 15-horsepower chassis specially designed for town use. It has a special drop frame, allowing of a very low side entrance, and transmission by cardan shaft to rear axle. Another Fiat feature is a two-seated runabout specially constructed for American roads, having special luggage-carrying facilities and a seat for chauffeur on the footboard.

Bayard-Clément.—This firm has adhered closely to last year's design in constructing the 1907 models. Ignition is now by magneto and sparking plugs for all machines, but all other Bayard features have given so much satisfaction that it has not been thought necessary to make changes. A new two-cylinder two-seated runabout has been created to meet a popular demand as well as a moderate-priced four-cylinder runabout at a low price. The low and moderate power machines have transmission by cardan shaft, the 24-30-horsepower, the 35-45 and 50-60 all have drive through countershaft and side chains to rear wheels. No six-cylinder models are constructed. The fours have separately cast cylinders with valves on opposite sides, all interchangeable. A metallic disk clutch is employed and the large models have ball bearings throughout.

Isotta-Fraschini.—The principal models of this Italian firm are a 35-horsepower four-cylinder runabout and a 50-65 six-cylinder machine. In both cases cylinders are cast in pairs with valves on opposite sides. Double chain drive is employed, there are four forward speeds and reverse, with selective type of change-speed gear and disk clutch. A new feature of the Isotta Fraschini models is a self-starter consisting of a gear-driven pump on the countershaft, compressing air into a metal tank placed in any convenient position on the chassis. Inlet piping connects up the tank to the motor, and by the pressing down of a lever the compressed air is admitted to those cylinders under compression.

Hotchkiss.—This concern devotes its attention chiefly to the new six-cylinder car, with three groups of cylinders placed as close together as possible to save space. Hotchkiss was a pioneer in the use of ball bearings, and has used them throughout in the new six. Valves are placed on opposite sides, camshafts are cut out of the solid and case-hardened. Timing gears are inclosed in oil-tight case at the front of motor and are metal against fibre. Ignition is by high-tension gear-driven Eiseman swinging magneto on the exhaust side. The carbureter is the new Mann type, warmed with hot air from the exhaust. Last year's honeycomb radiator and gear-driven pump are retained. Only slight changes have been made in the leather-faced cone clutch mounted on an extension of the crankshaft. Transmission is by cardan shaft to live axle, and brakes are double-acting type on shaft behind gear box and on steel drums on rear wheels. Two four-cylinder models are also constructed.

Panhard.—These models are 18, 24, 35 and 50 horsepower, all with four cylinders cast separately. The crankshaft has five bearings and lower half of crankcase can be taken off without disturbing the shaft. Valves are placed on opposite sides, water circulation is by gear-driven pump turning at the same speed as the motor, and a honeycomb radiator is employed. Ignition is by high-tension magneto and sparking plugs, accumulators also being carried. The magneto is mounted on the same shaft as the water circulating pump. A special metallic clutch is employed and transmission is by countershaft and side chains. There are four speeds forward and reverse with lever of the straight-through type. Brakes act on the differential and on the interior of drums on rear wheels.

Rochet-Schneider.—These models are four in number, rated at 16-20, 30-35, 40-45 and 70 horsepower. The first three have four cylinders cast in pairs, the 70-horsepower having six cylinders, also in pairs. Transmission in every case is by countershaft and side chains to rear wheels; ignition is by low-tension magneto, gasoline has pressure feed, water circulation by rotary pump and tubular radiator. There are four speeds and reverse on each model, with selective type of change-speed gear.

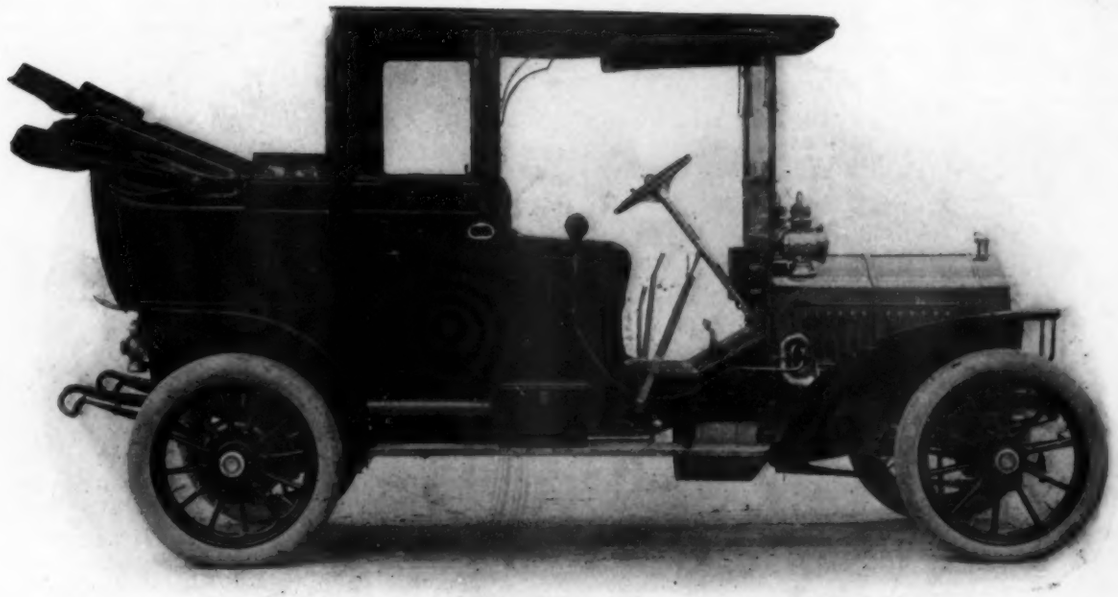
De Dietrich.—These types are 16, 24, 40 and 60 horsepower, all with four cylinders cast in pairs, but with a common water chamber for the whole group. Low-tension Simms-Bosch magneto is employed with sparking mechanism on side of cylinders. Water circulation is by gear-driven pump and gilled tube radiator. Gasoline tank is under pressure. Transmission is through countershaft and side chains, with "gate" type of change-speed lever.

Rolls-Royce.—Although enjoying a good reputation in England, where it won the important Tourist Trophy last year, the Rolls-Royce machine is practically unknown in America. Standard models are a 20-horsepower four-cylinder, a 30-horsepower six-cylinder, and a 40-50-horsepower six cylinder. The last named is an entirely new car having cylinders cast in sets of three with all the valves on one side, the whole being set upon an aluminum crank chamber of ample dimensions. The Rolls-Royce carbureter is accessibly placed on right-hand side of engine, the induction pipe leading away between the two sets of cylinders, joined up to the distributor pipe at the center. Exhaust pipes have rather a unique arrangement, there being a small expansion chamber to each set of cylinders leading away to the muffler below frame. Double ignition is employed, the coil and two-way switch being only parts carried on the dashboard. Final drive to the rear road wheels is through propeller shaft and bevel gearing. The whole of the mechanism is set upon a double cambered pressed steel frame mounted upon substantial springs, giving a very substantial look to the car as a whole.

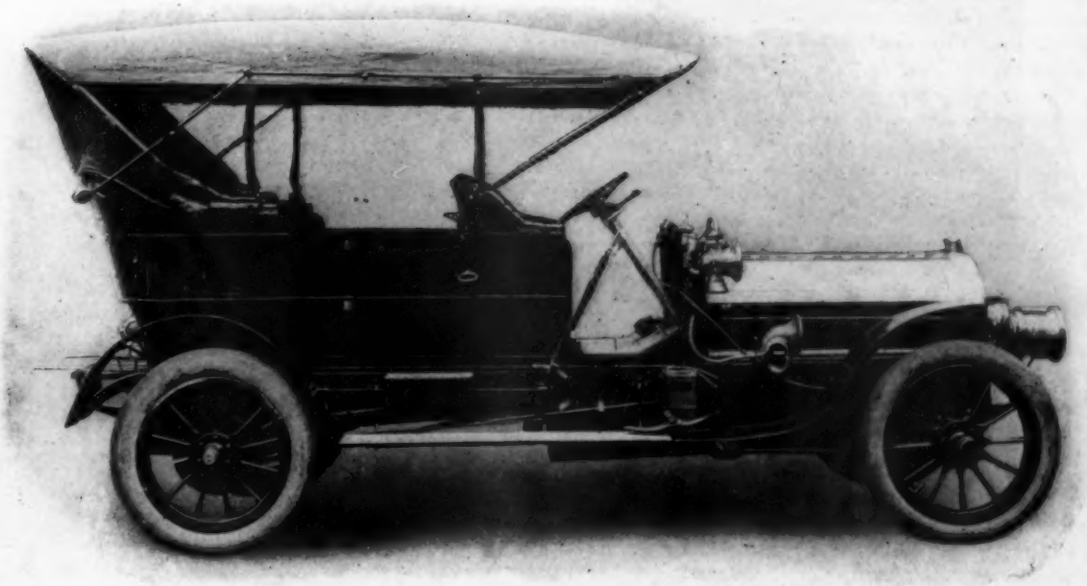
DARRACQ EXHIBIT, WHERE VANDERBILT CUP WAS SHOWN.

BAYARD-CLEMENTS AS PRESENTED BY SIDNEY BOWMAN.

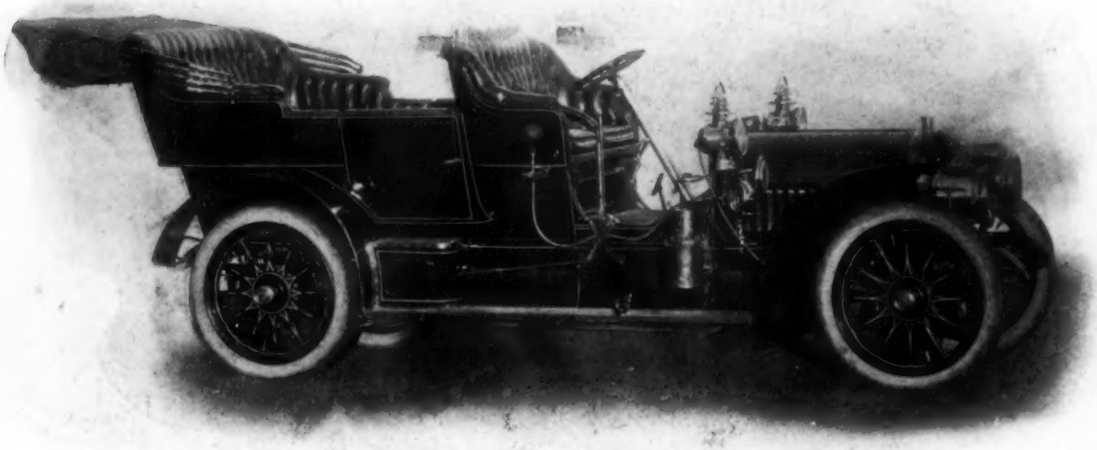
1907 MODELS OF THE LEADING MAKERS



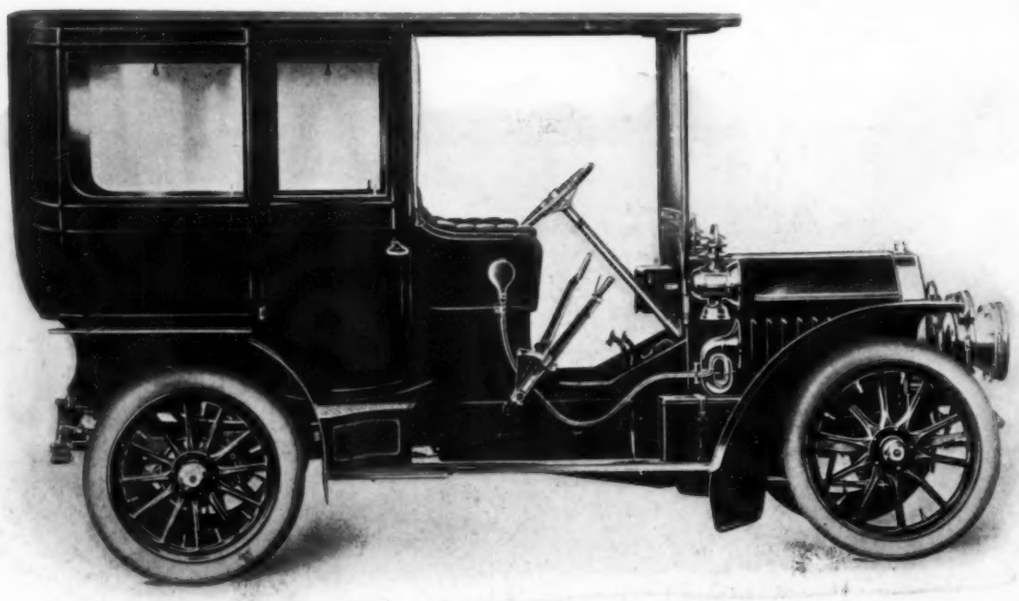
PACKARD LANDAULET, 30-H.P., 4 CYLINDERS, PRICE $5,500.
Packard Motor Car Co., Detroit, Mich.



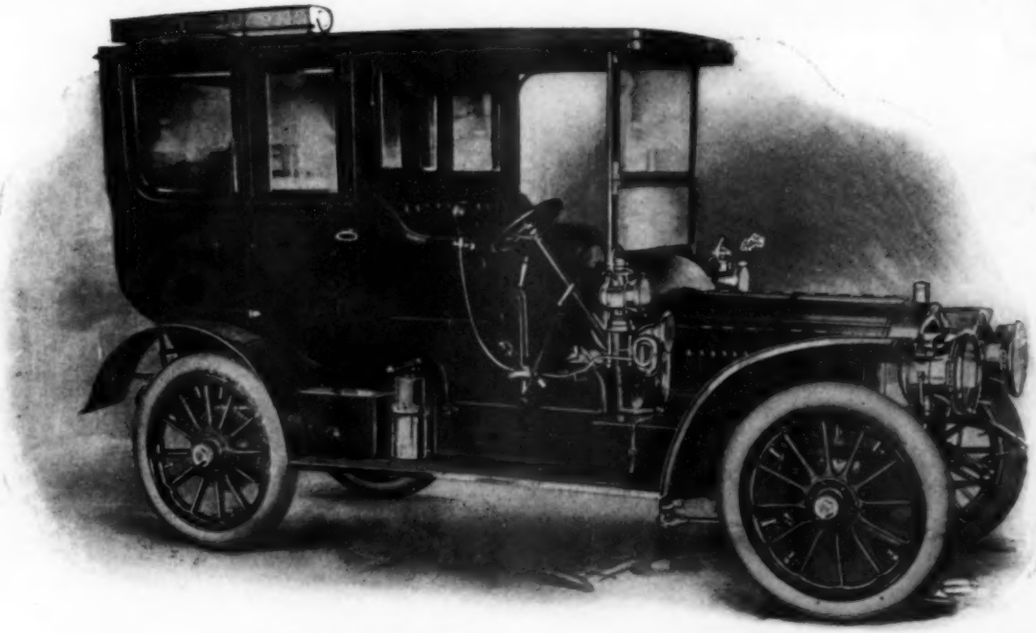
PIERCE GREAT ARROW, 65-H.P., 6 CYLINDERS, PRICE $6,500.
George N. Pierce Co., Buffalo, N. Y.



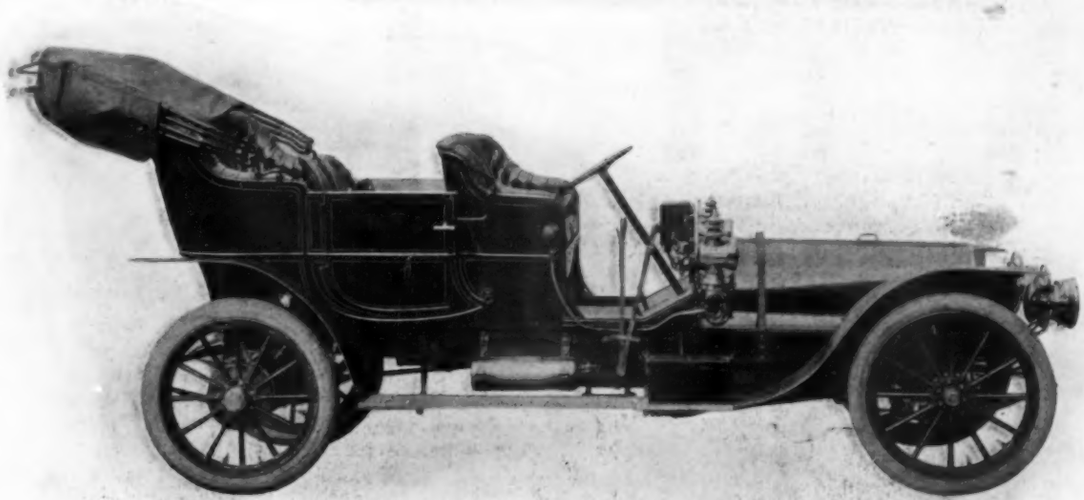
LOCOMOBILE MODEL H, 35-H.P., 4 CYLINDERS, PRICE $4,500.
Locomobile Company of America, Bridgeport, Conn.



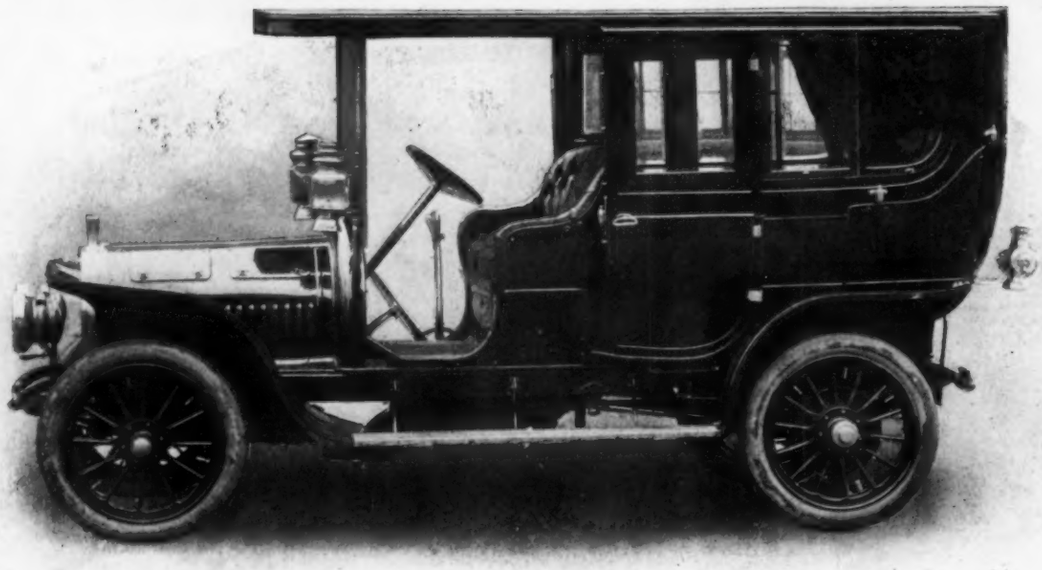
PEERLESS MODEL 16 LIMOUSINE, 45-H.P., 4 CYLINDERS, PRICE $5,000.
Peerless Motor Car Co., Cleveland, O.



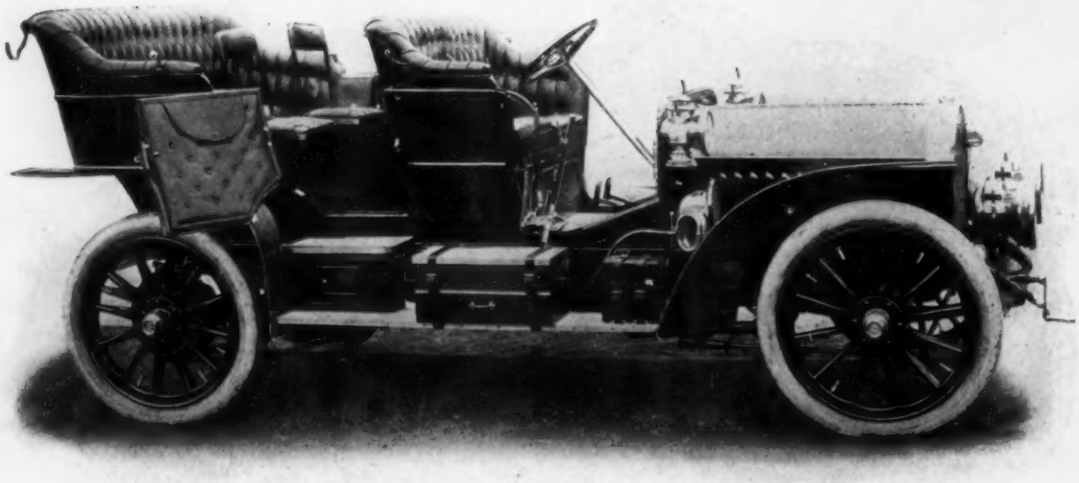
THOMAS FLYER LIMOUSINE, 60-H.P., 4 CYLINDERS, PRICE $5,200.
E. R. Thomas Motor Co., Buffalo, N. Y.



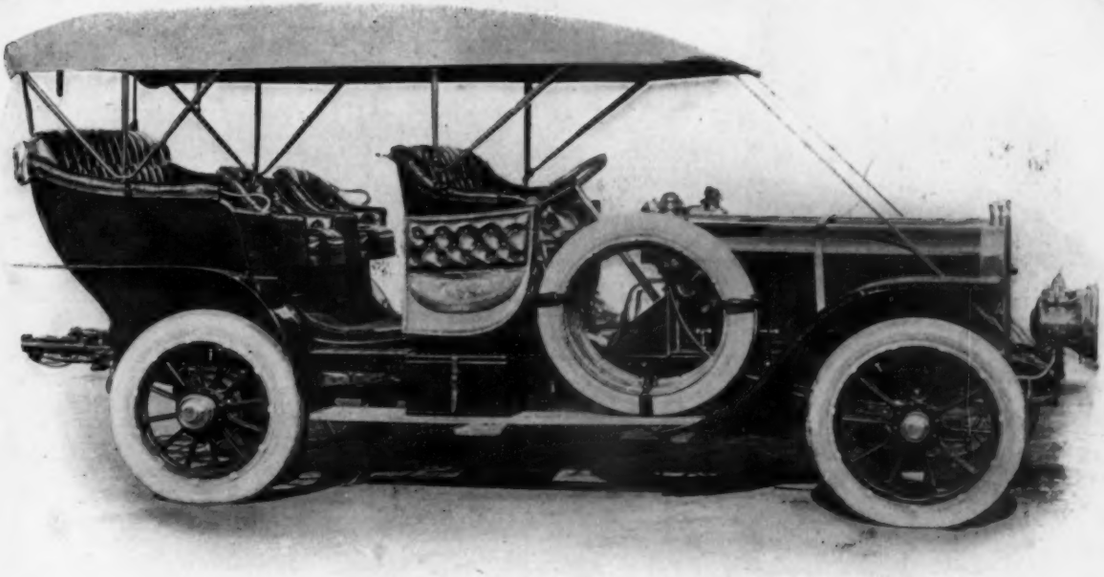
FRANKLIN MODEL H, 30-H.P., 6 CYLINDERS, PRICE $4,000.
H. H. Franklin Mfg. Co., Syracuse, N. Y.



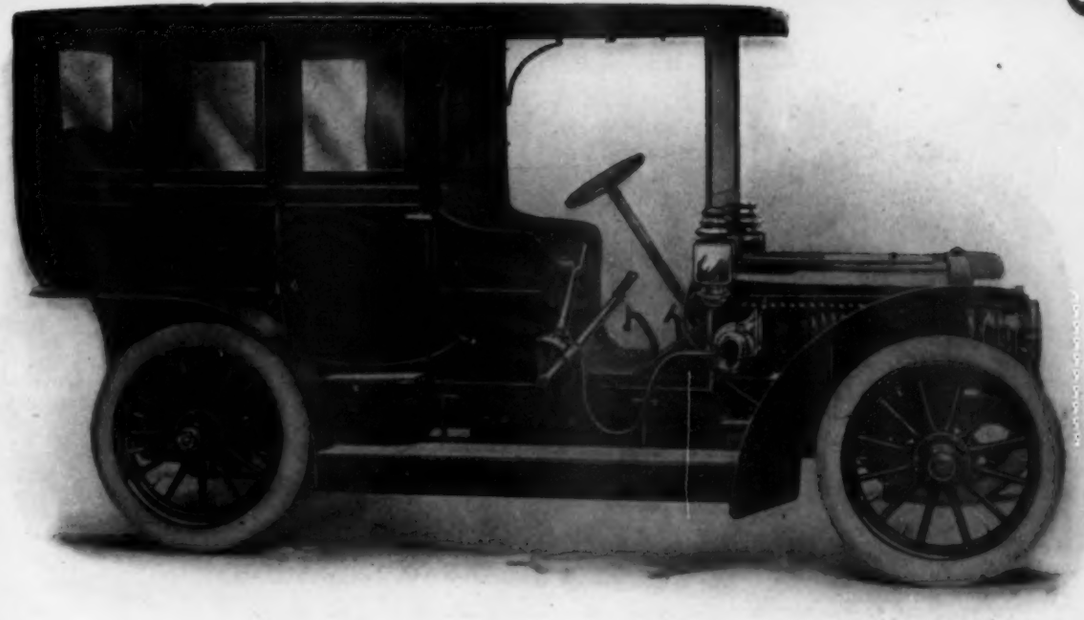
ROYAL MODEL A LIMOUSINE, 45-H.P., 4 CYLINDERS, PRICE $5,000.
Royal Motor Car Co., Cleveland, O.



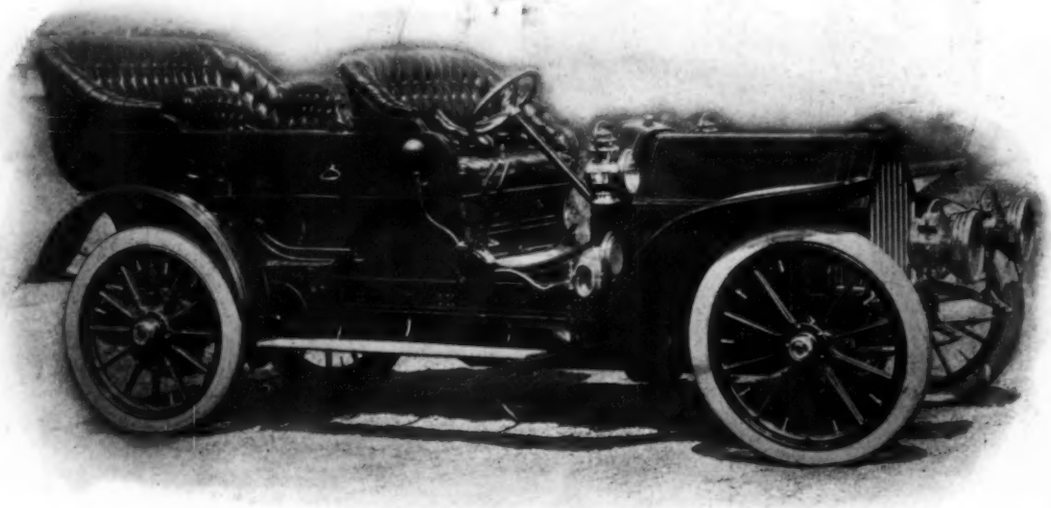
COLUMBIA MARK XLIX, 40 to 45-H.P., 4 CYLINDERS, PRICE $4,500.
Electric Vehicle Co., Hartford, Conn.



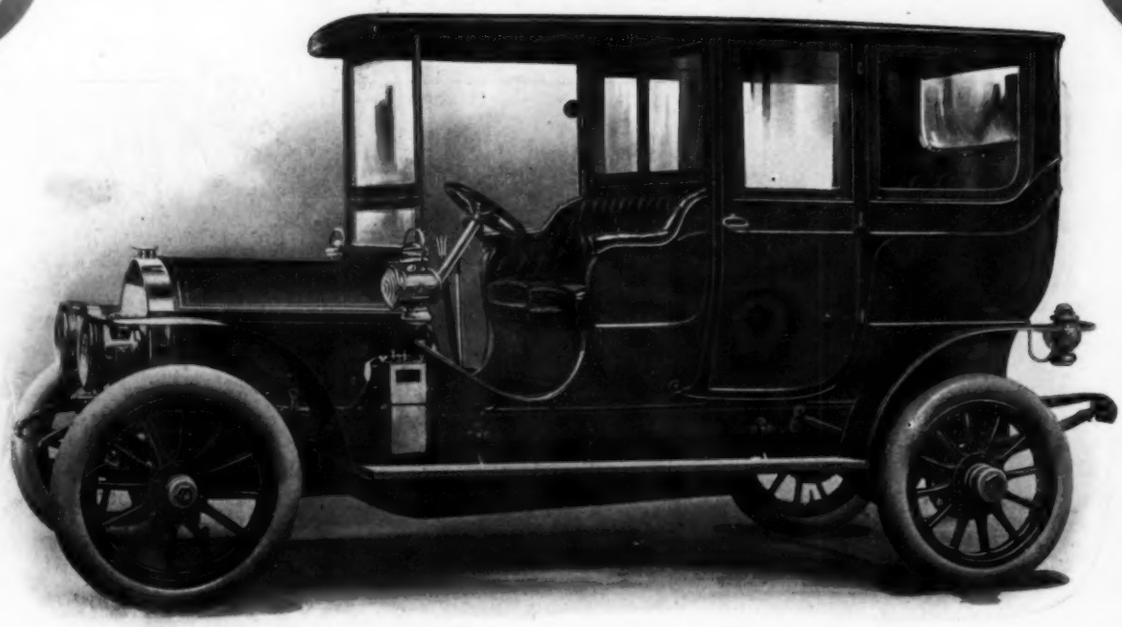
STEVENS-DURYEA "BIG 6," 50-H.P., 6 CYLINDERS, PRICE $6,000.
Stevens Arms & Tool Co., Chicopee Falls, Mass.



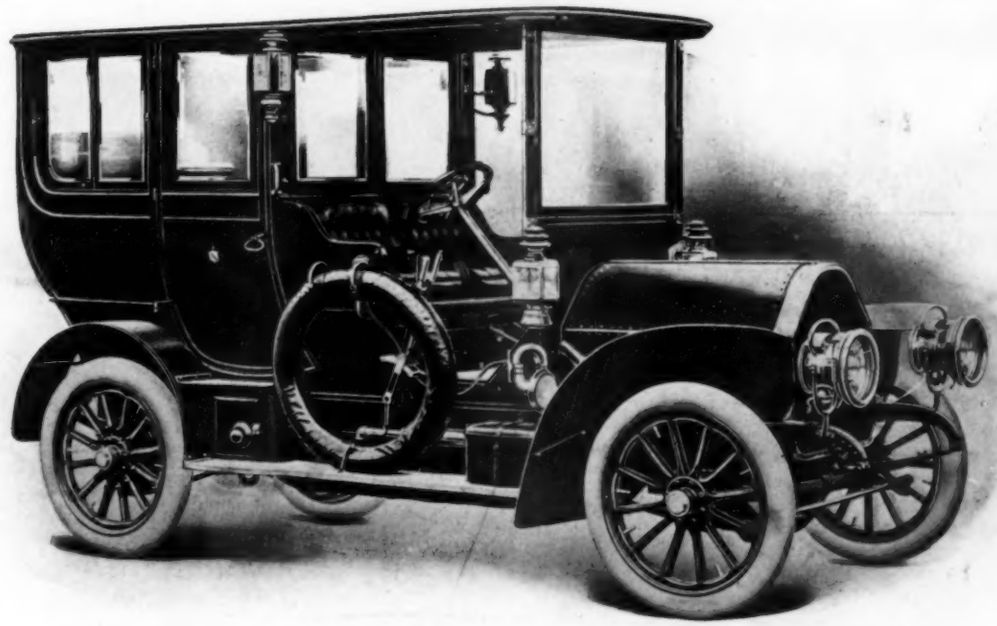
LOZIER LIMOUSINE, 40-H.P., 4 CYLINDERS, PRICE $6,000.
Lozier Motor Co., New York City.



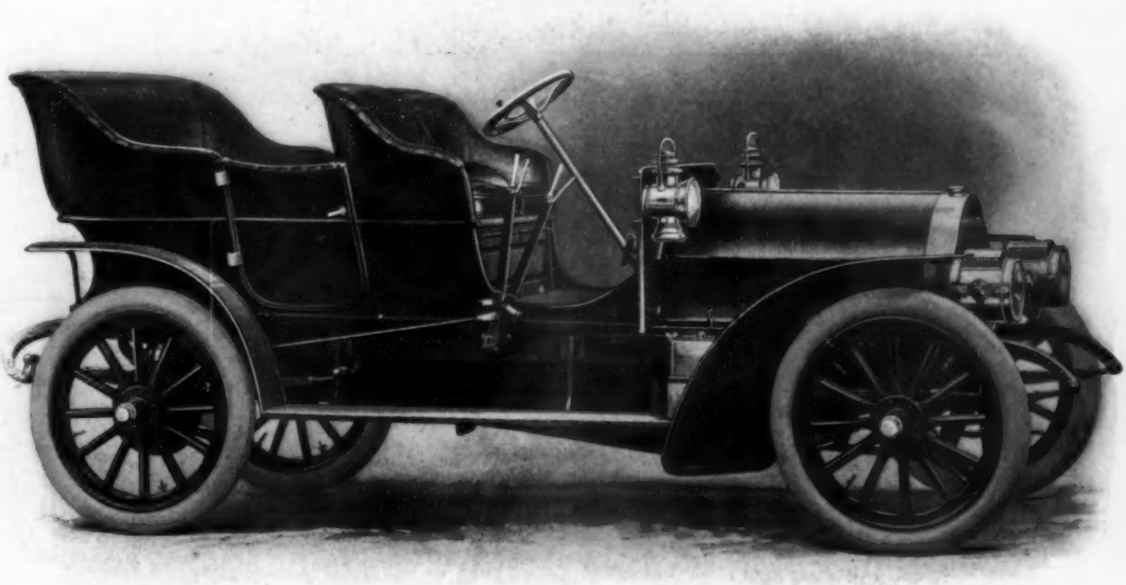
POPE-TOLEDO MODEL XV TOURING CAR, 50-H.P., 4 CYLINDERS, PRICE $4,250.
Pope Motor Car Co., Toledo, O.



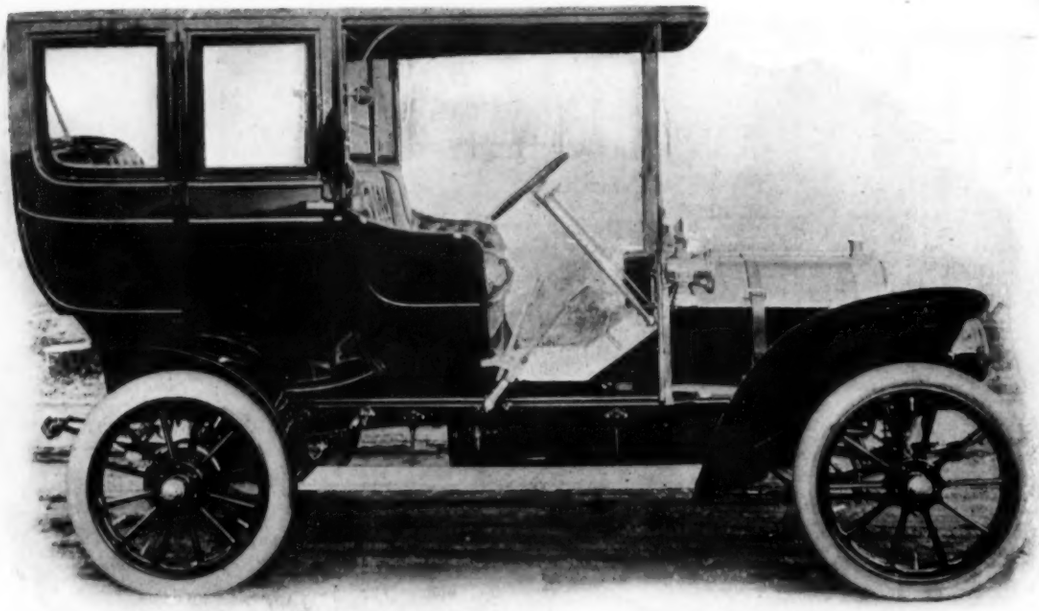
WALTER LIMOUSINE, 40-H.P., 4 CYLINDERS, PRICE $6,000.
Walter Automobile Co., Trenton, N. J.



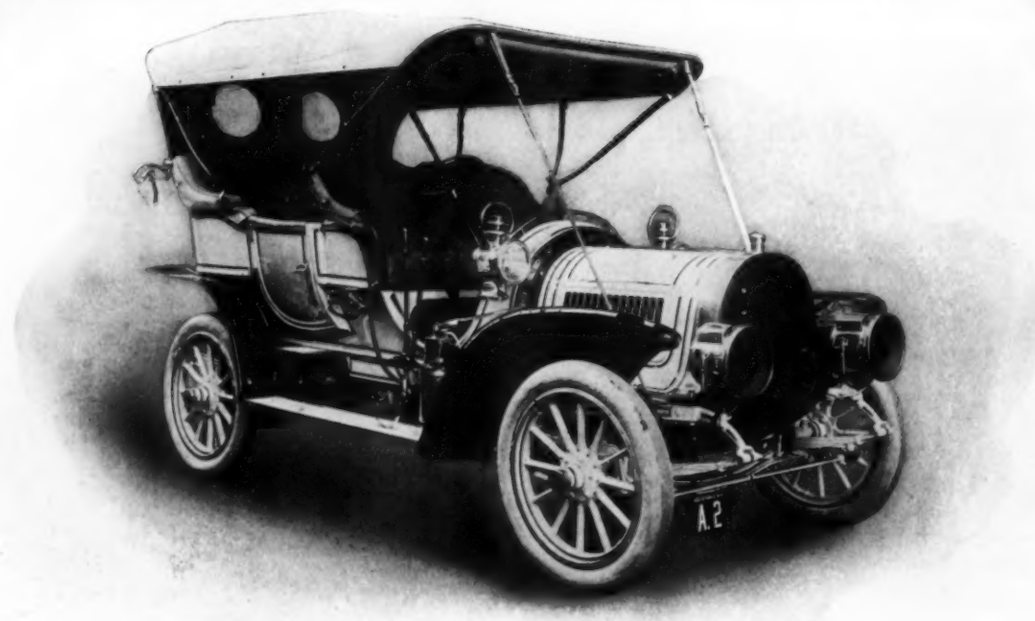
KNOX MODEL G LIMOUSINE, 35 TO 40-H.P., 4 CYLINDERS, PRICE $5,000.
Knox Automobile Co., Springfield, Mass.



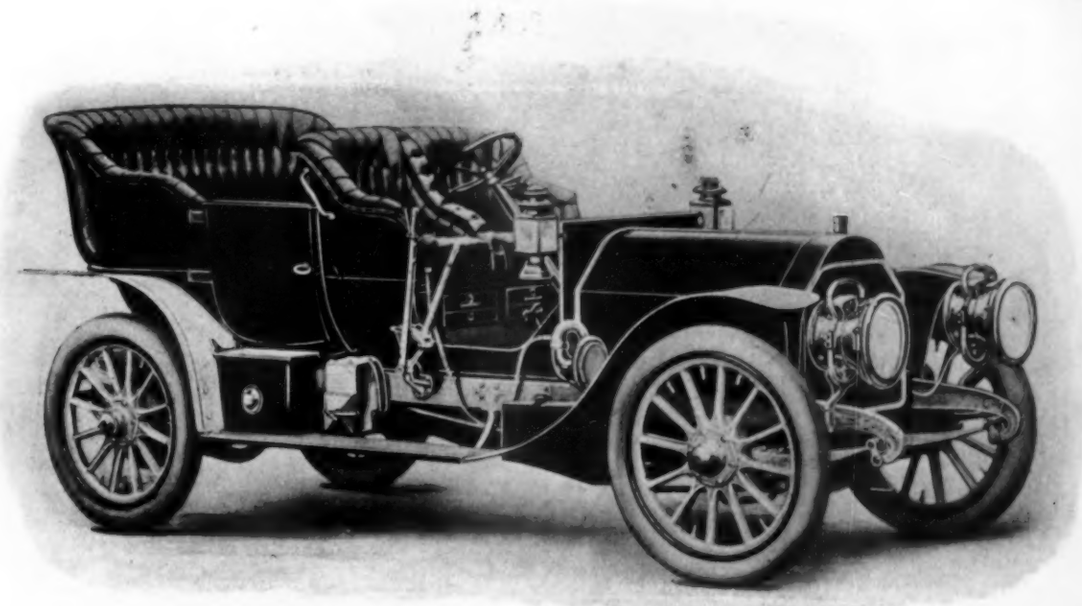
HEWITT TOURING CAR, 50 TO 60-H.P., 8 CYLINDERS, PRICE $5,500.
Hewitt Motor Co., New York City.



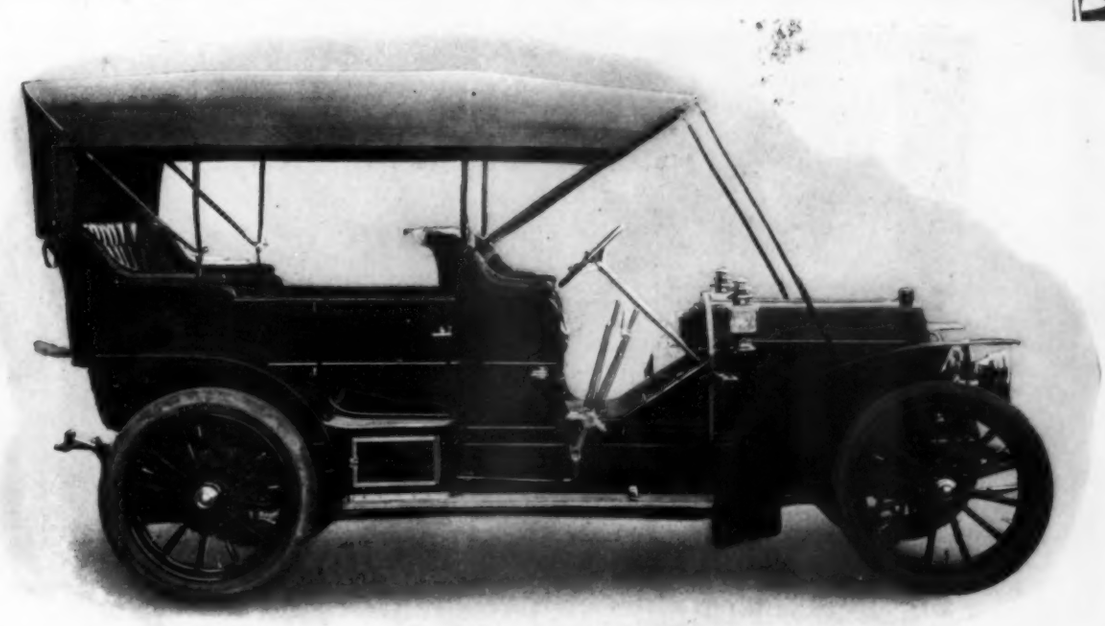
OLDSMOBILE LIMOUSINE, 40-H.P., 4 CYLINDERS, PRICE $3,800.
Olds Motor Works, Lansing, Mich.



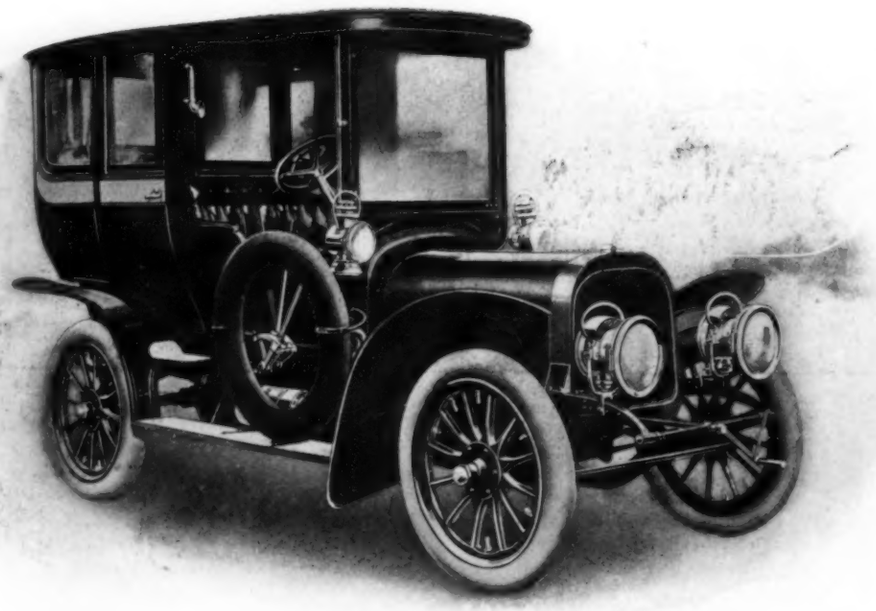
POPE-HARTFORD MODEL L, 25 TO 30-H.P., 4 CYLINDERS, PRICE $2,750.
Pope Manufacturing Co., Hartford, Conn.



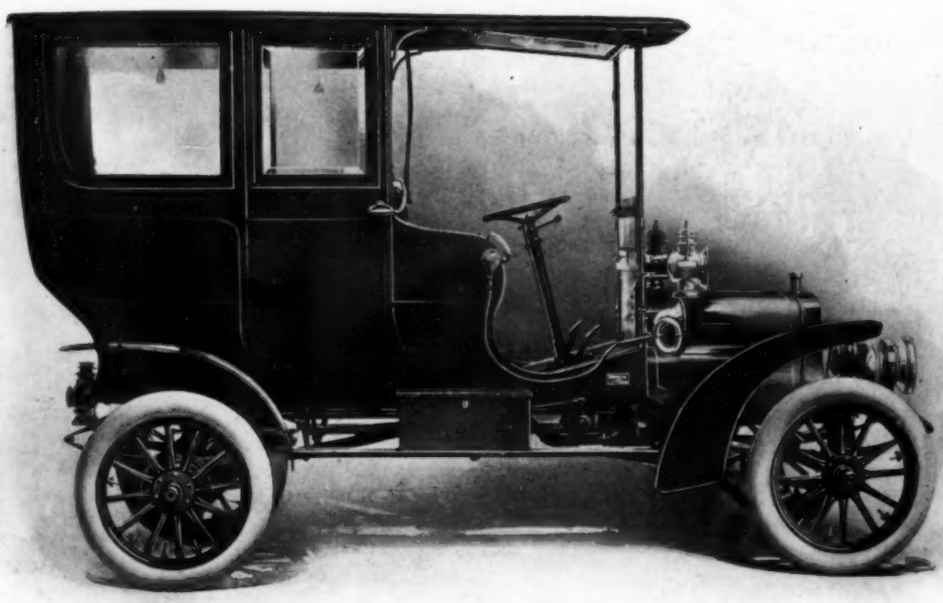
STEARNS TOURING CAR, 30 TO 60-H.P., 4 CYLINDERS, PRICE $4,500.
F. B. Stearns Co., Cleveland, O.



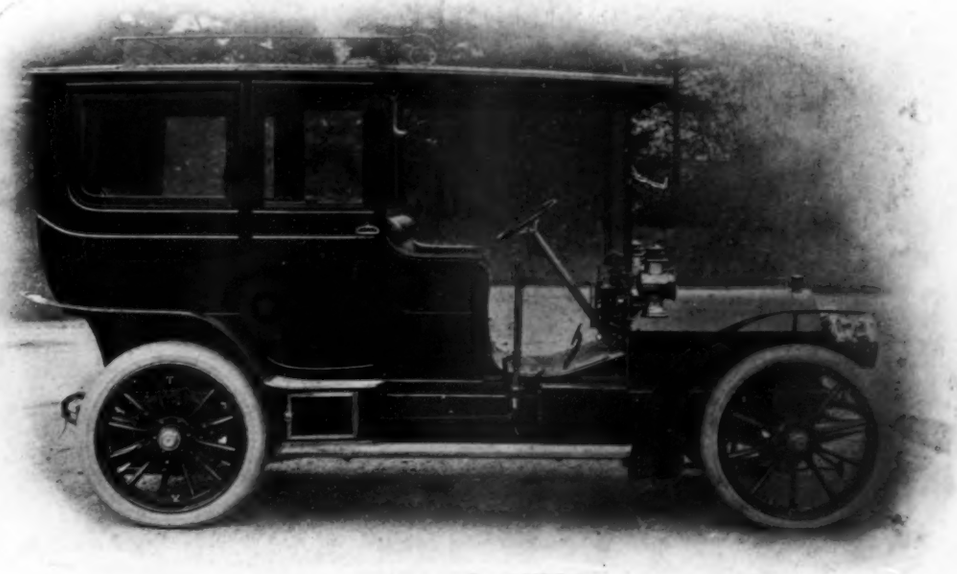
MATHESON TOURING CAR, 50-H.P., 4 CYLINDERS, PRICE $5,500.
Matheson Motor Car Co., Wilkesbarre, Pa.



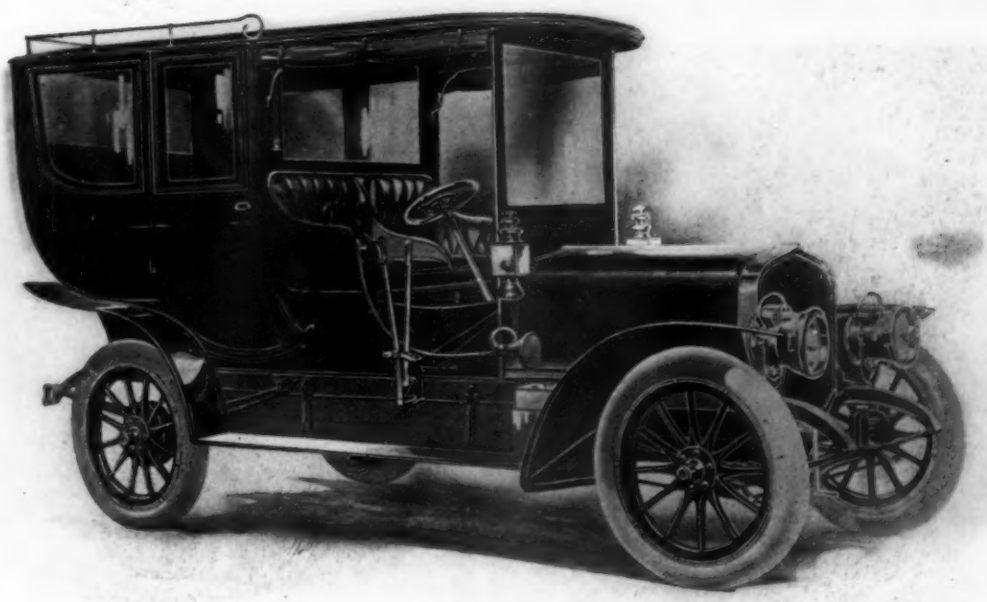
HAYNES MODEL T LIMOUSINE, 50-H.P., 4 CYLINDERS, PRICE $4,500.
Haynes Automobile Co., Kokomo, Ind.



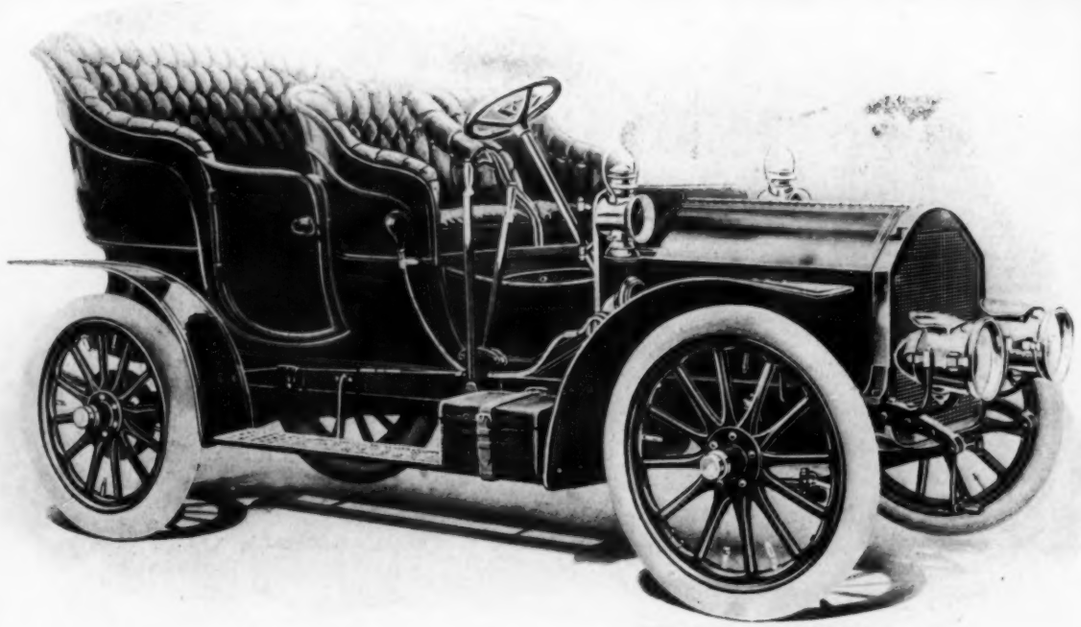
NORTHERN MODEL C LIMOUSINE, 20-H.P., 2 CYLINDERS, PRICE $2,800.
Northern Motor Car Co., Detroit, Mich.



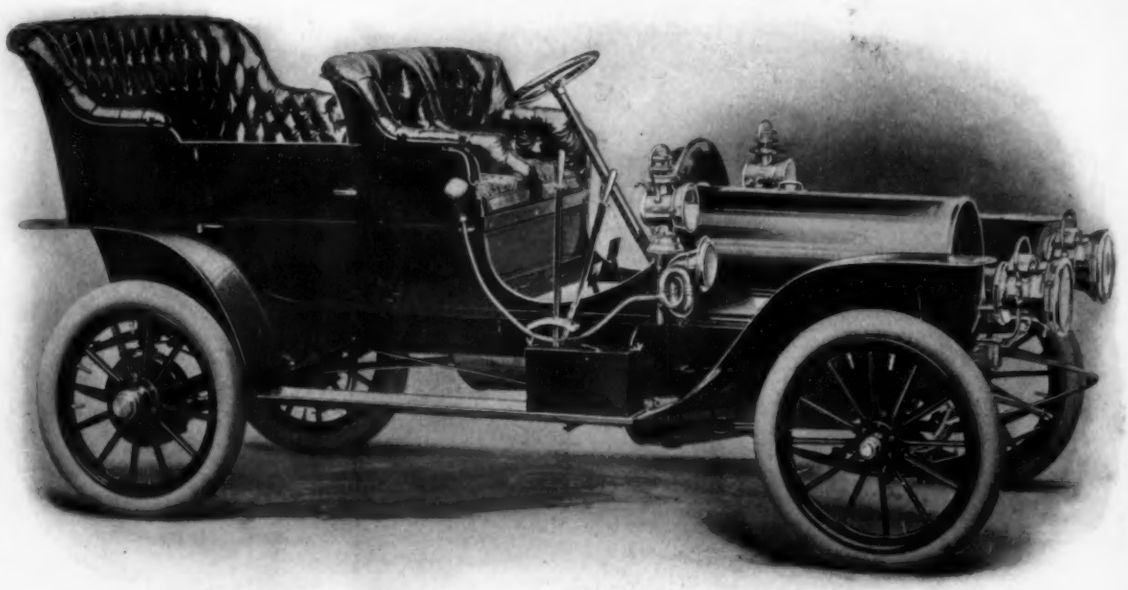
SIMPLEX LIMOUSINE, 30 TO 35-H.P., 4 CYLINDERS, PRICE $6,500.
Smith & Mabley, Inc., New York City.



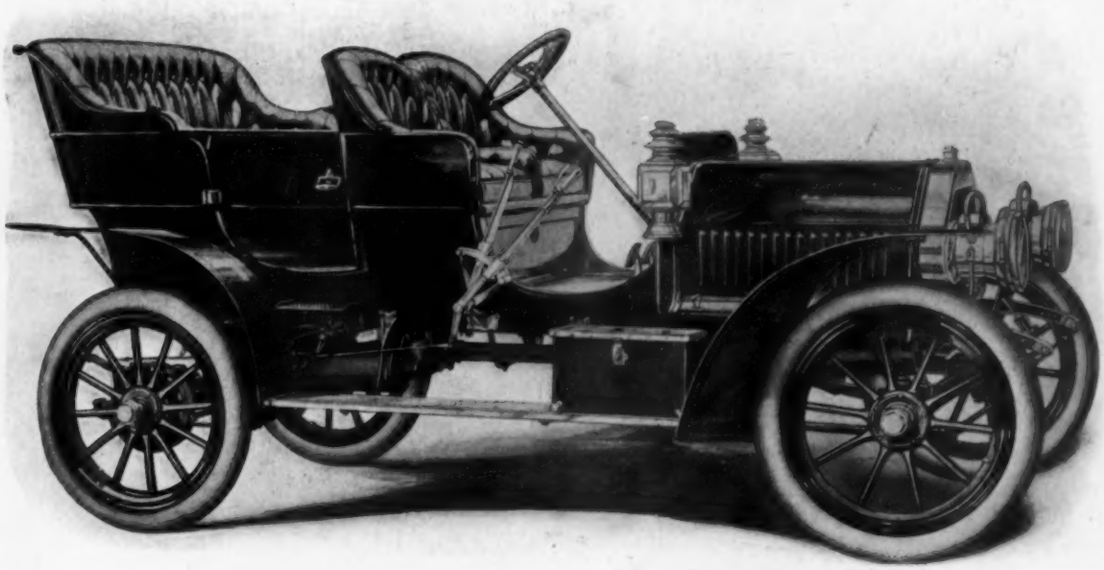
CORBIN MODEL H LIMOUSINE, 24-H.P., 4 CYLINDERS, PRICE $3,500.
Corbin Motor Vehicle Corp., New Britain, Conn.



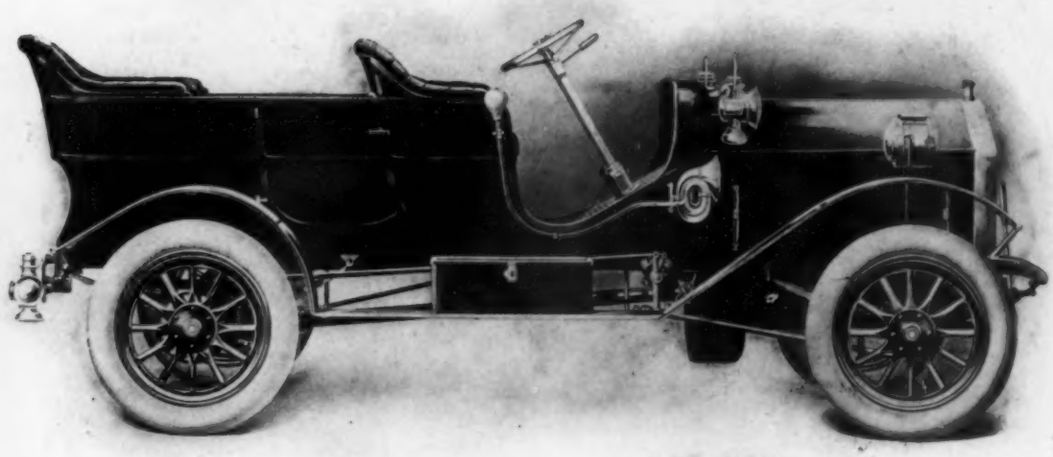
WALTHAM ORIENT TOURING CAR, 20-H.P., 4 CYLINDERS, PRICE $1,750.
Waltham Manufacturing Co., Waltham, Mass.



FRANKLIN MODEL D, 20-H.P., 4 CYLINDERS, PRICE $2,800.
H. H. Franklin Mfg. Co., Syracuse, N. Y..

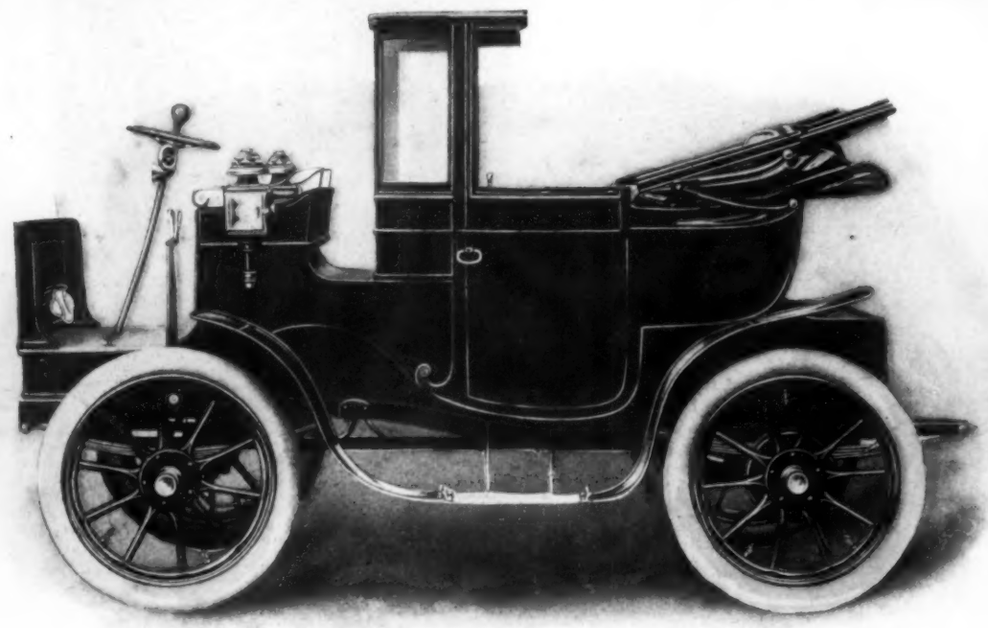


CADILLAC MODEL G, 20-H.P., 4 CYLINDERS, PRICE $2,000.
Cadillac Motor Car Co., Detroit, Mich.



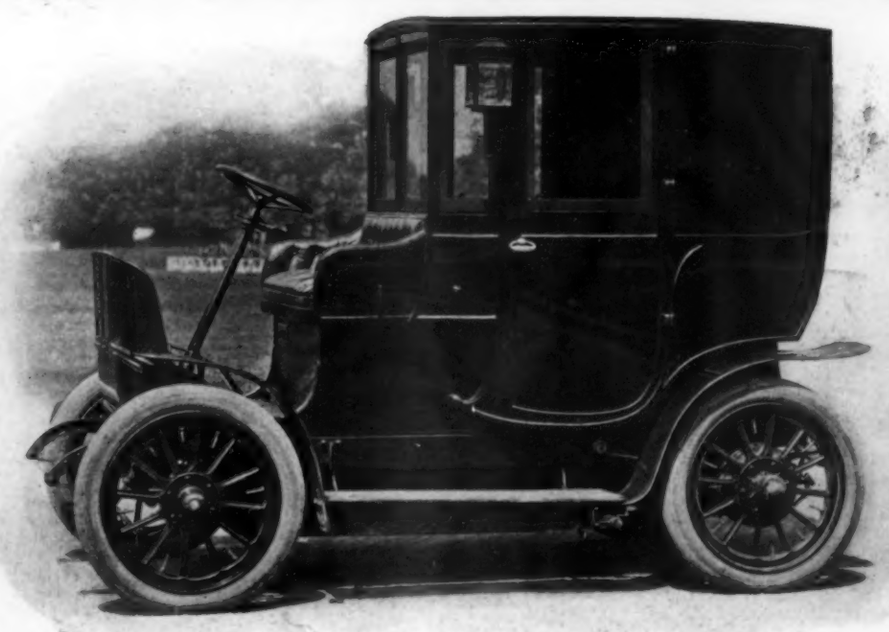
NORTHERN MODEL L, 50-H.P., 4 CYLINDERS, PRICE $3,500.
Northern Motor Car Co., Detroit, Mich.

COLUMBUS ELECTRIC INSIDE-DRIVEN COUPE, PRICE $1,900.
Columbus Buggy Co., Columbus, O.



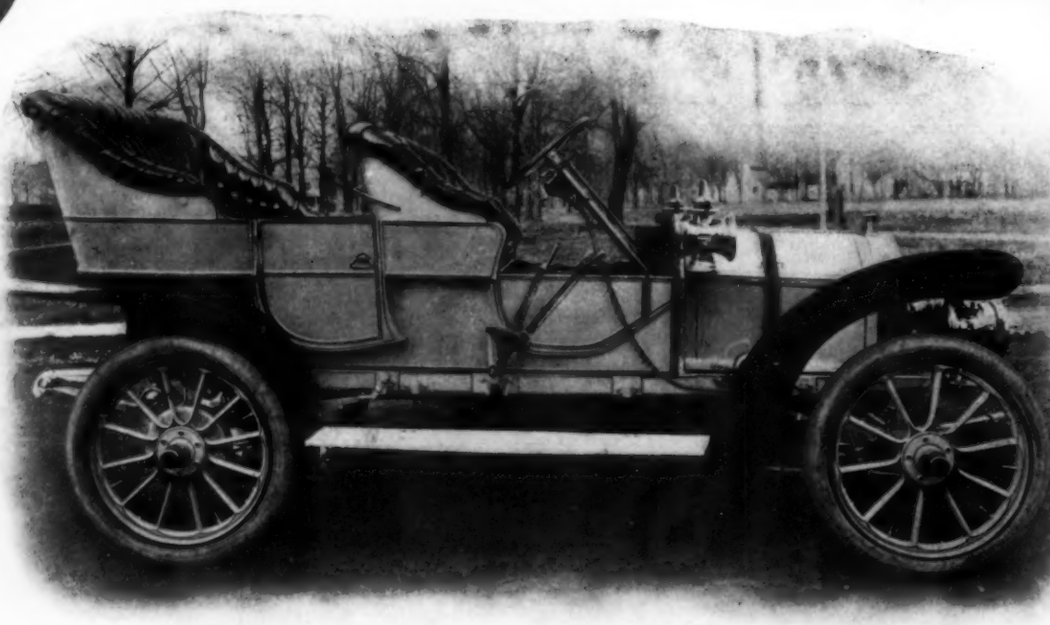
BAKER ELECTRIC LANDAULET, PRICE $4,000.
Baker Motor Vehicle Co., Cleveland, O.

BABCOCK ELECTRIC BROUGHAM MODEL 7, PRICE $4,000.
Babcock Electric Carriage Co., Buffalo, N. Y.

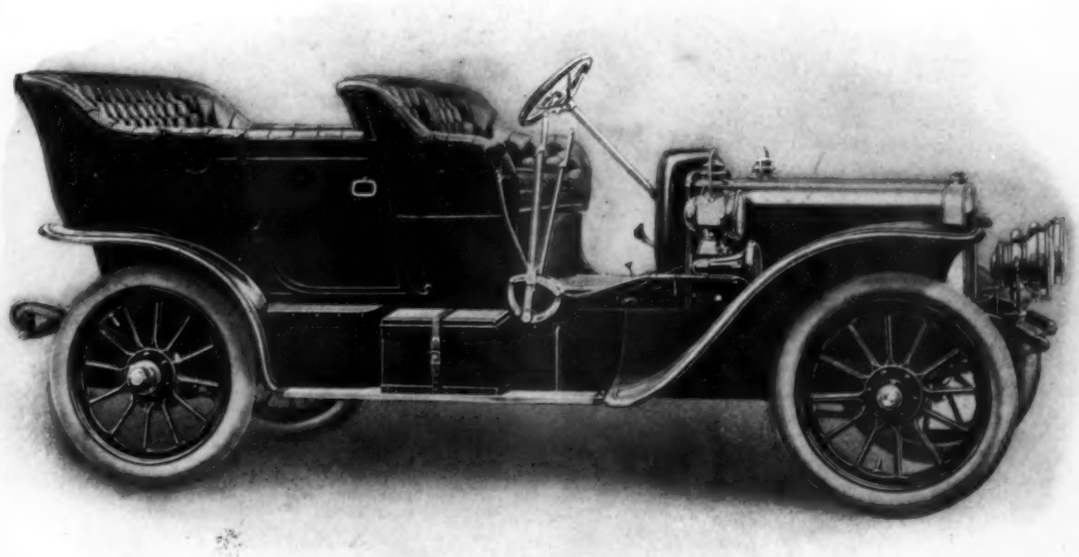


COLUMBIA MARK LXVIII ELECTRIC BROUGHAM, PRICE $4,000.
Electric Vehicle Co., Hartford, Conn.

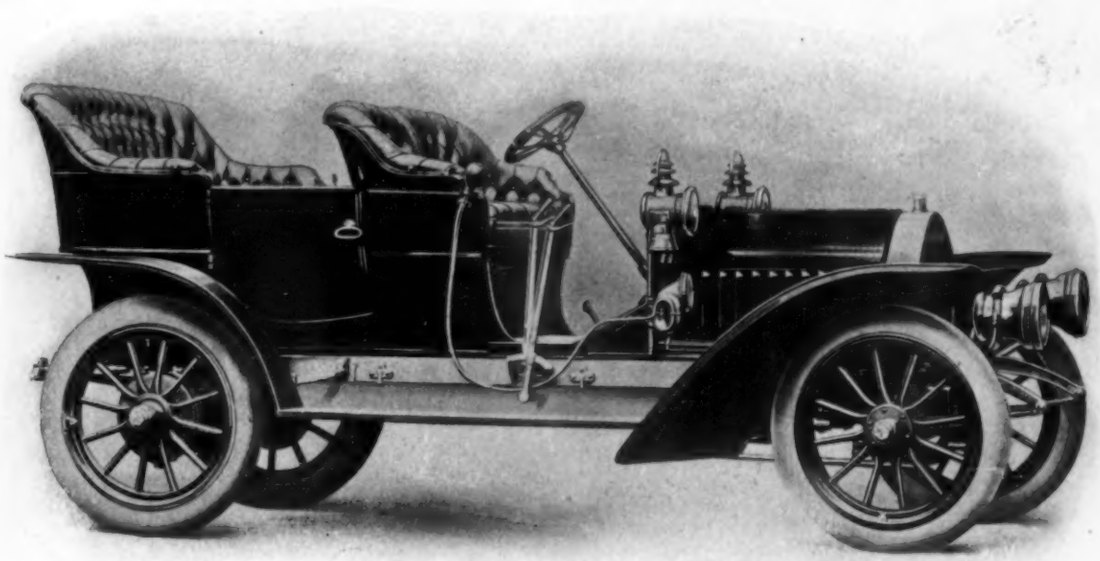
THOMAS "FORTY," 40-H.P., 4 CYLINDERS, PRICE $2,750.
E. R. Thomas Detroit Co., Detroit, Mich.



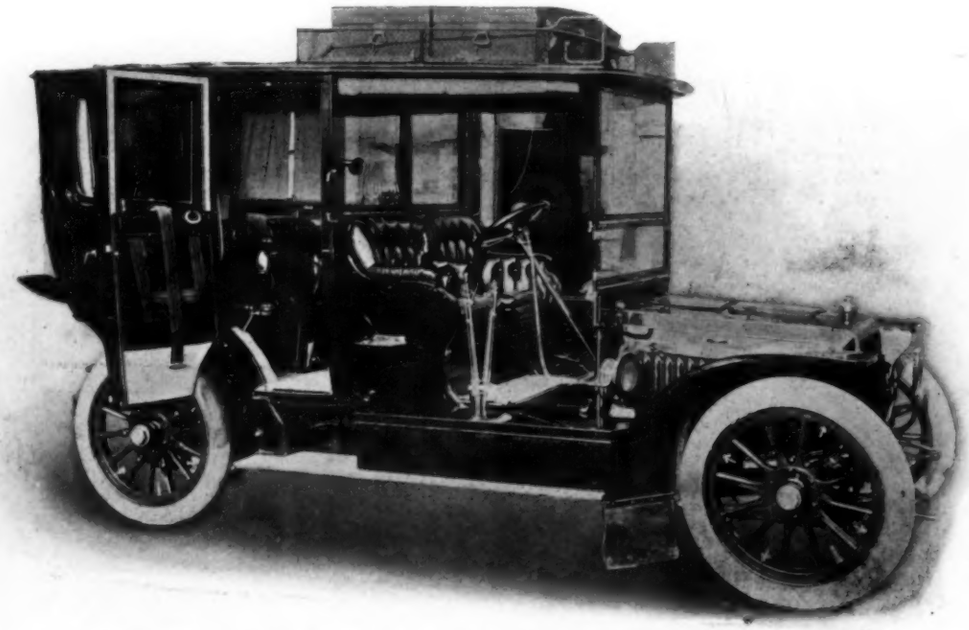
OLDSMOBILE TOURING CAR, 40-H.P., 4 CYLINDERS, PRICE $2,750.
Olds Motor Works, Lansing, Mich.



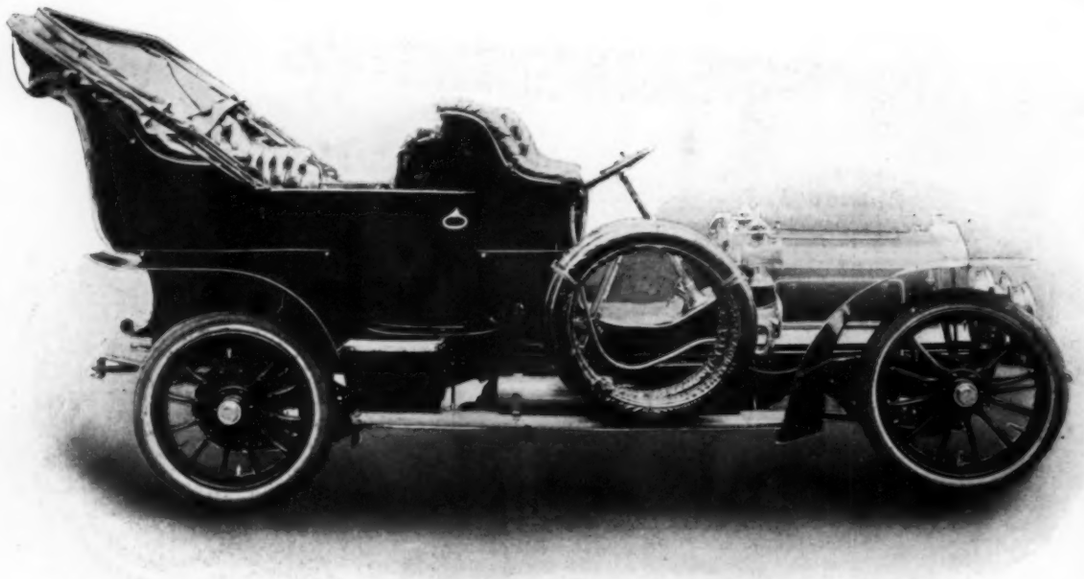
WINTON MODEL M, 40-H.P., 4 CYLINDERS, PRICE $3,500.
Winton Motor Carriage Co., Cleveland, O.



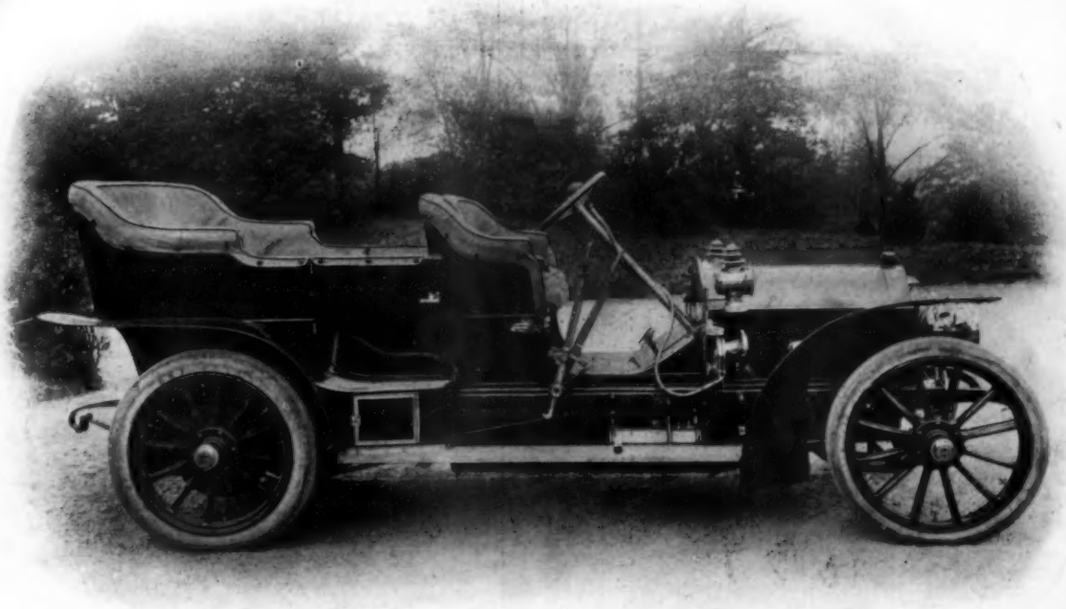
AUTOCAR TYPE XIV, 30-H.P., 4 CYLINDERS, PRICE $3,000.
Autocar Company, Ardmore, Pa.



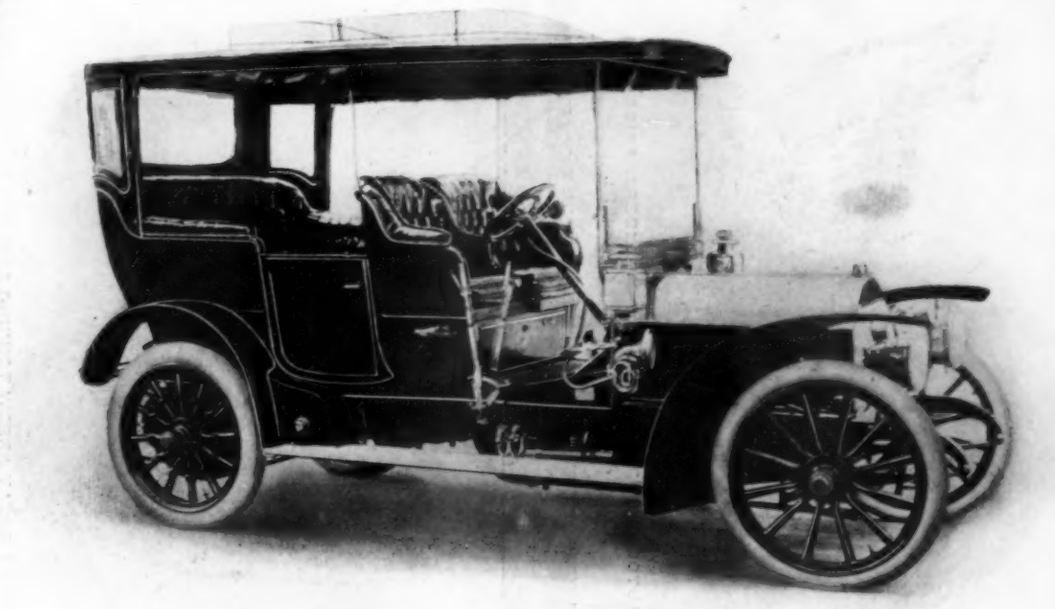
PANHARD LIMOUSINE, 24-H.P., 4 CYLINDERS, PRICE $6,000 (CHASSIS).
Smith & Mabley, Inc., New York City.



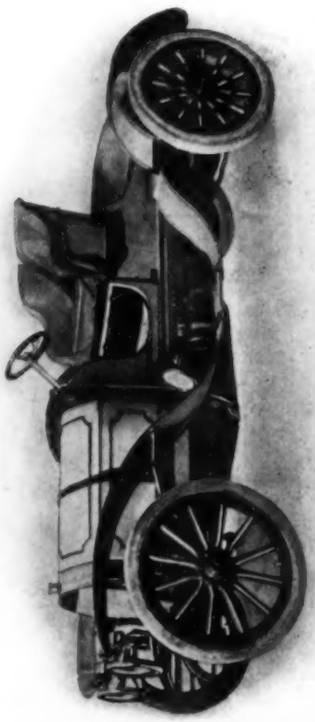
CLEMENT-BAYARD TOURING CAR, 45-H.P., 4 CYLINDERS, PRICE $8,750.
Sidney B. Bowman Auto Co., New York City.



ISOTTA-FRASCHINI TOURING CAR, 35-H.P., 4 CYLINDERS, PRICE $7,000.
Smith & Mabley, Inc., New York City.

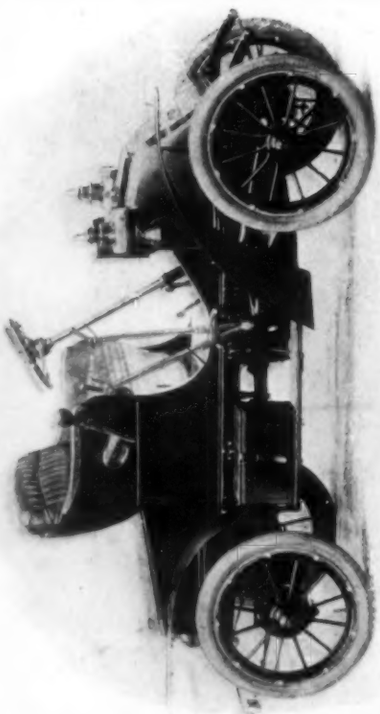


FIAT CONVEX PHAETON, 35-H.P., 4 CYLINDERS, PRICE $7,500 (CHASSIS).
Hol-Tan Company, New York City.

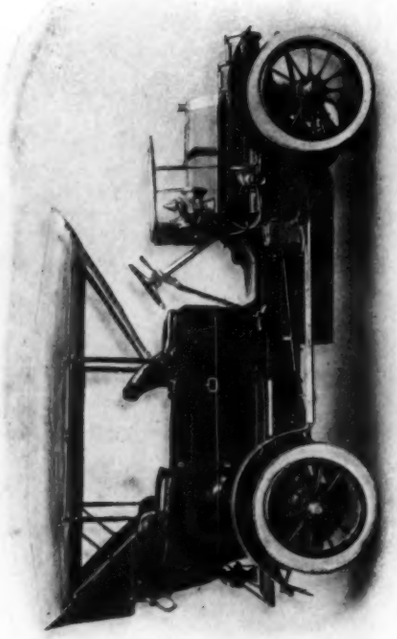


FIAT RUNABOUT, 50-H.P., 4 CYLINDERS, PRICE $12,000.
Hol-Tan Company, New York City.

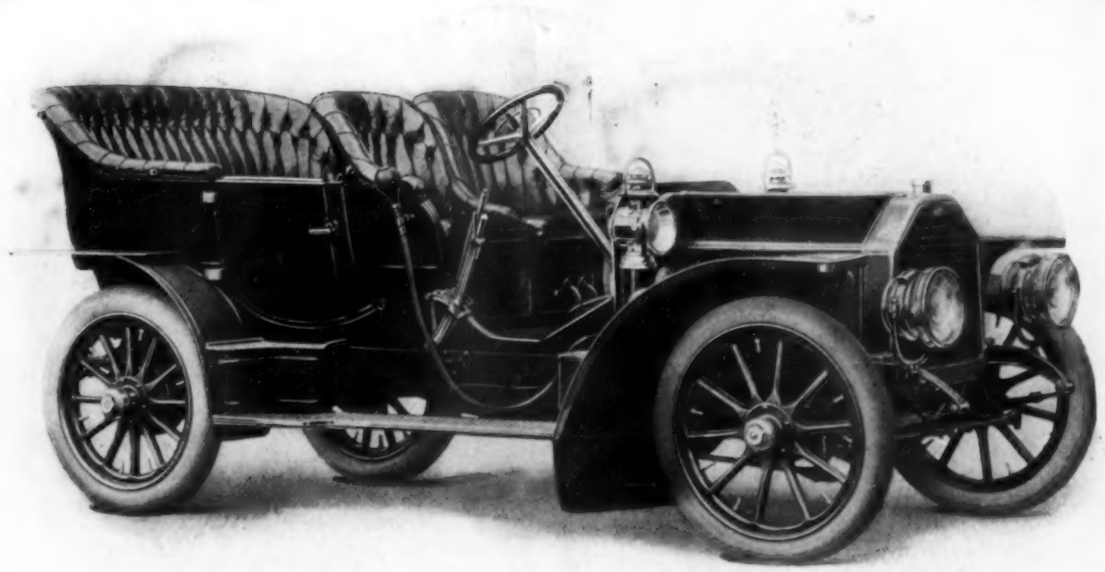
ORIENT MODEL ER, 4-H.P., 1 CYLINDER, PRICE $475.
Waltham Manufacturing Co., Waltham, Mass.



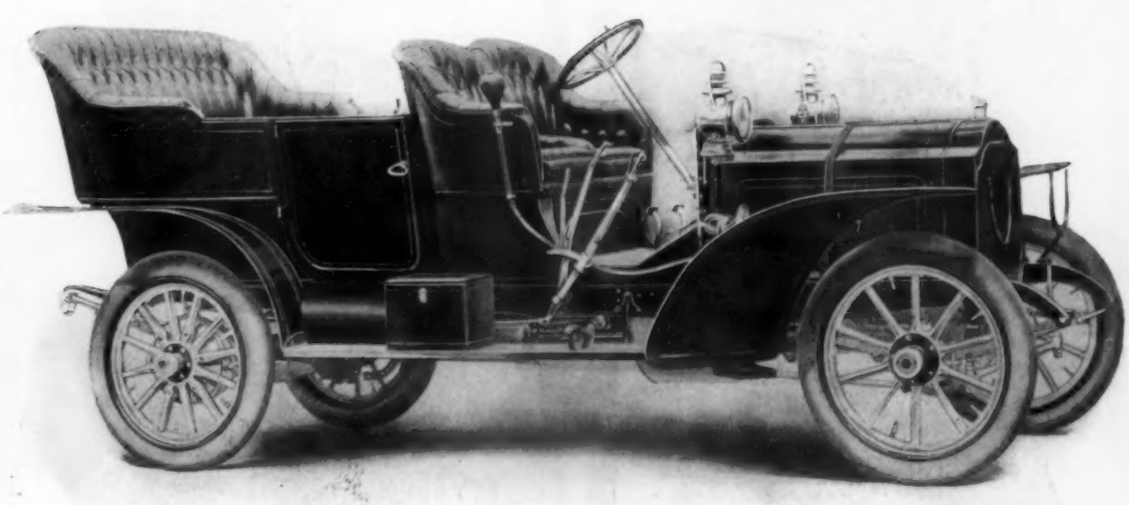
AUTOCAR TYPE XV, 14-H.P., 2 CYLINDERS, PRICE $1,200.
Autocar Company, Ardmore, Pa.



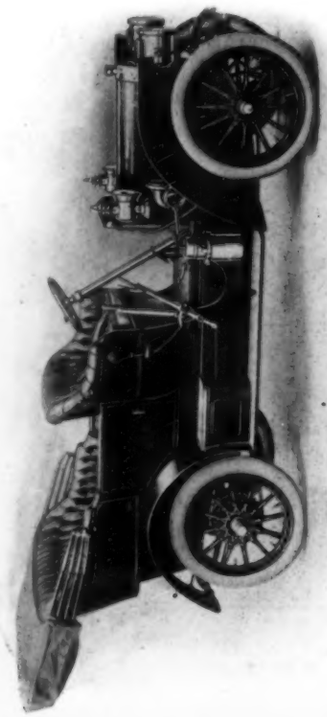
PIERCE GREAT ARROW TOURING CAR, 30-H.P., 4 CYLINDERS,
PRICE $4,000.
George N. Pierce Co., Buffalo, N. Y.



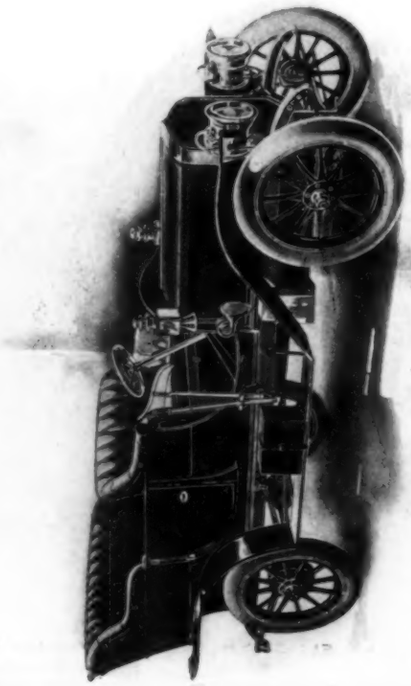
PEERLESS MODEL 15, 30-H.P., 4 CYLINDERS, PRICE $4,000.
Peerless Motor Car Co., Cleveland, O.



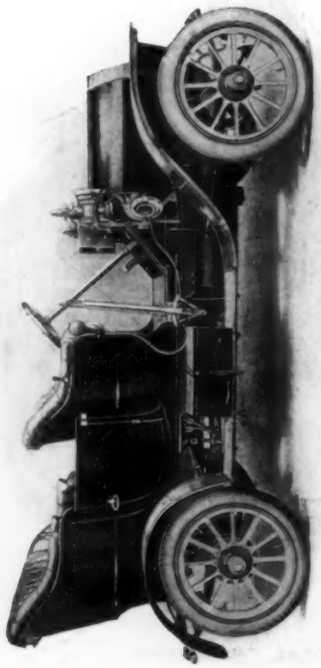
PACKARD TOURING CAR, 30-H.P., 4 CYLINDERS, PRICE $4,200.
Packard Motor Car Co., Detroit, Mich.



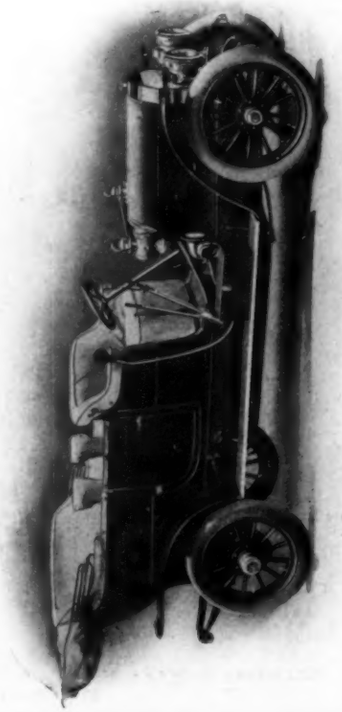
LOCOMOBILE TYPE E TOURING CAR, 20-H.P., 4 CYLINDERS, PRICE $2,800.
Locomobile Company of America, Bridgeport, Conn.



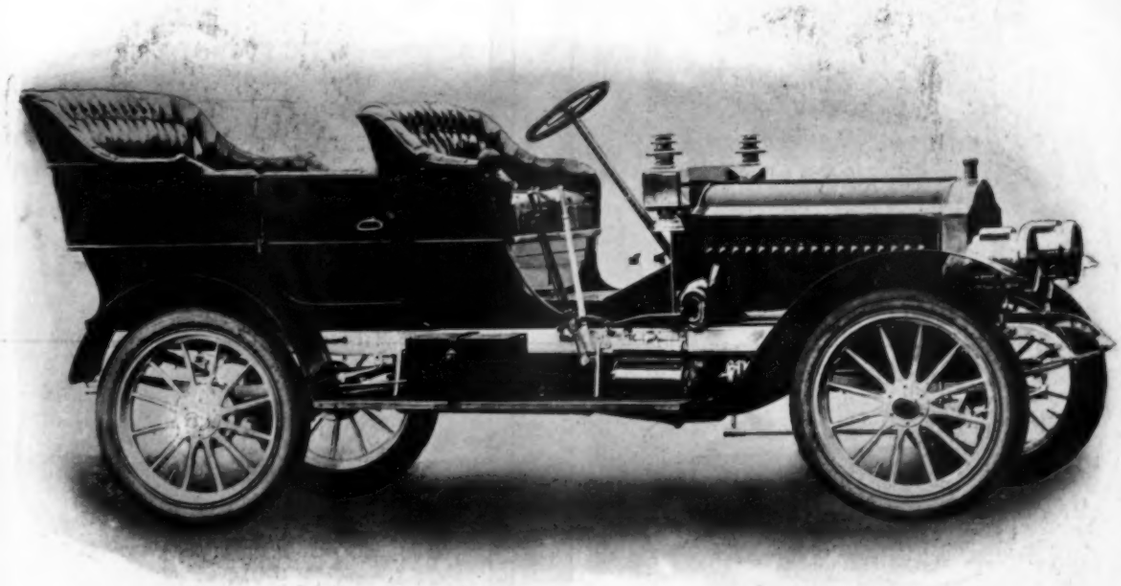
CORBIN MODEL H TOURING CAR, 24-H.P., 4 CYLINDERS, PRICE $2,500.
Corbin Motor Vehicle Corp., New Britain, Conn.



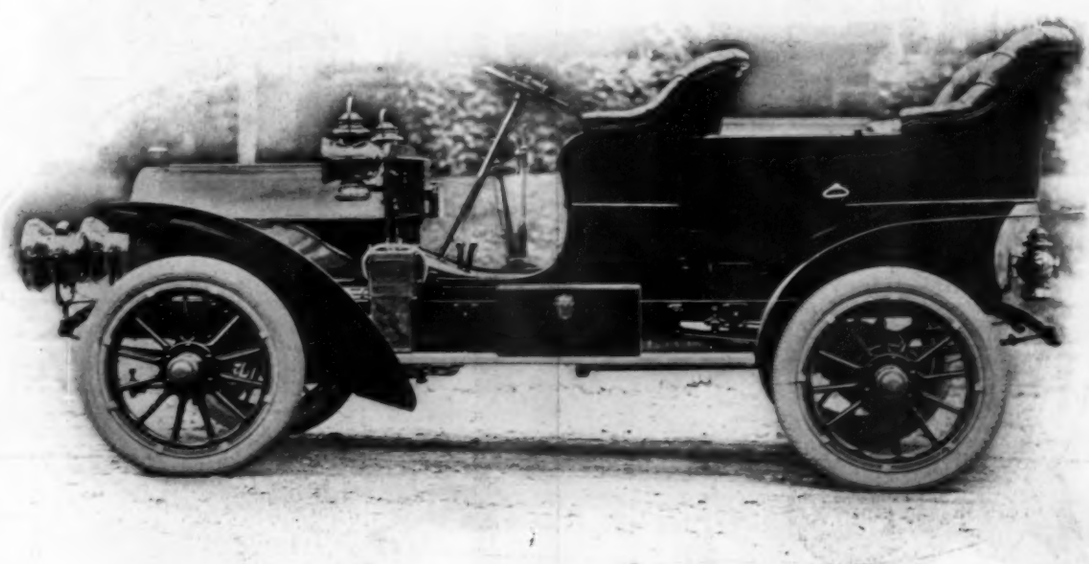
KNOX MODEL H TOURING CAR, 25 TO 30-H.P., 4 CYLINDERS, PRICE $2,500.
Knox Automobile Co., Springfield, Mass.



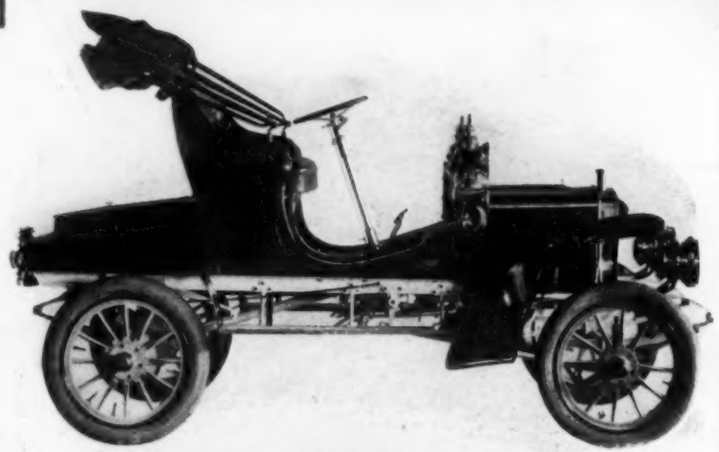
WALTER TOURING CAR, 50-H.P., 4 CYLINDERS, PRICE $5,500.
Walter Automobile Co., Trenton, N. J.



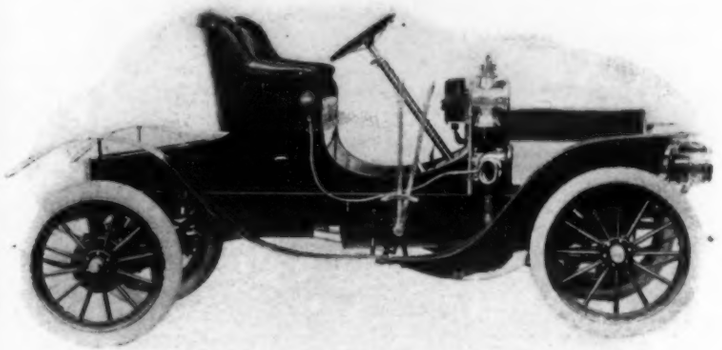
ELMORE MODEL 18 TOURING CAR, 35-H.P., 4 CYLINDERS, PRICE $2,500.
Elmore Manufacturing Co., Clyde, O.



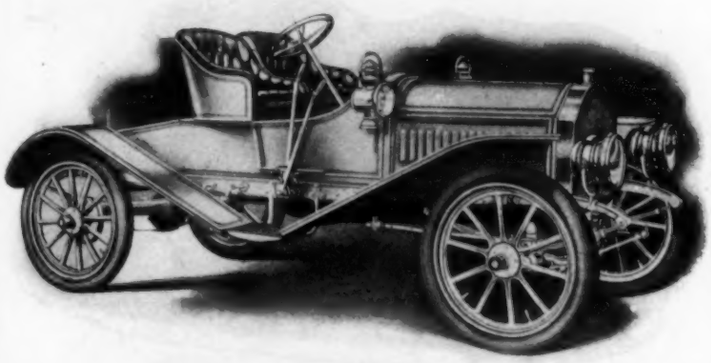
STEVENS-DURYEA MODEL R TOURING CAR, 20-H.P., 4 CYLINDERS, PRICE $2,500.
Stevens-Duryea Co., Chicopee Falls, Mass.



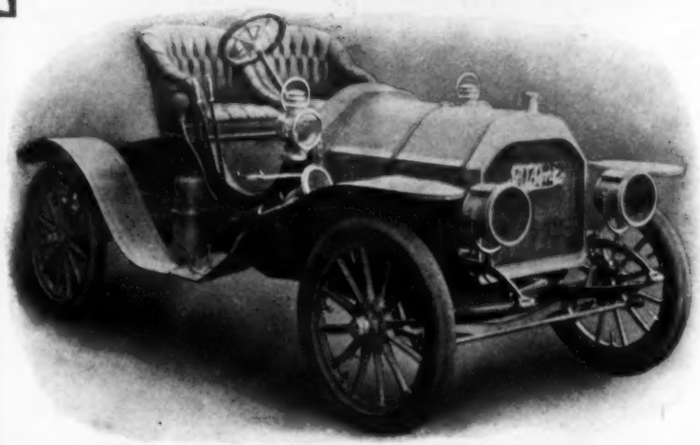
NORTHERN MODEL C RUNABOUT, 20-H.P., 2 CYLINDERS, PRICE $1,600.
Northern Motor Car Co., Detroit, Mich.



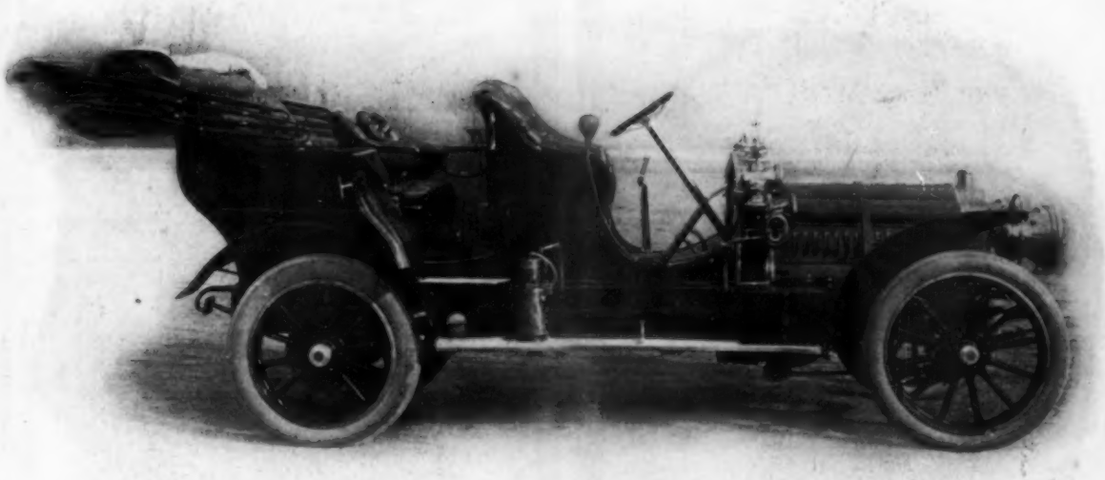
FRANKLIN MODEL G RUNABOUT, 12-H.P., 4 CYLINDERS, PRICE $1,850.
H. H. Franklin Mfg. Co., Syracuse, N. Y.



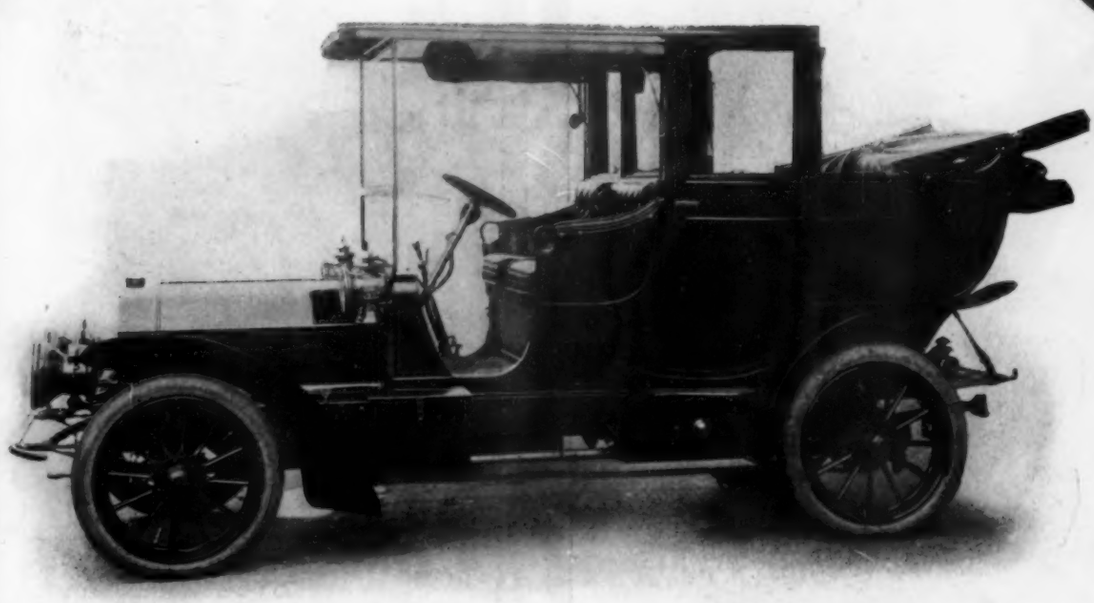
BUICK MODEL K RUNABOUT, 25 TO 30-H.P., 4 CYLINDERS, PRICE $2,000.
Buick Motor Co., Jackson, Mich.



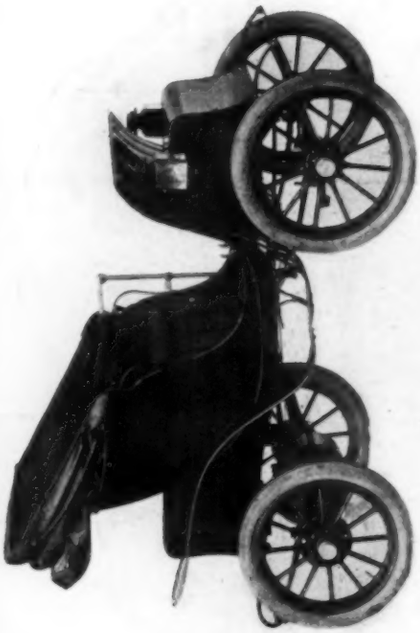
POPE-TRIBUNE MODEL X RUNABOUT, 16 TO 20-H.P., 4 CYLINDERS, PRICE $1,750.
Pope Mfg. Co., Hagerstown, Md.



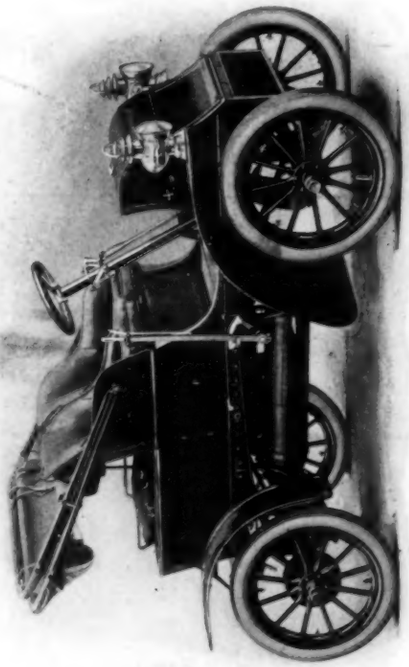
THOMAS FLYER TOURING CAR, 60-H.P., 4 CYLINDERS, PRICE $4,000, WITHOUT TOP.
E. R. Thomas Motor Co., Buffalo, N. Y.



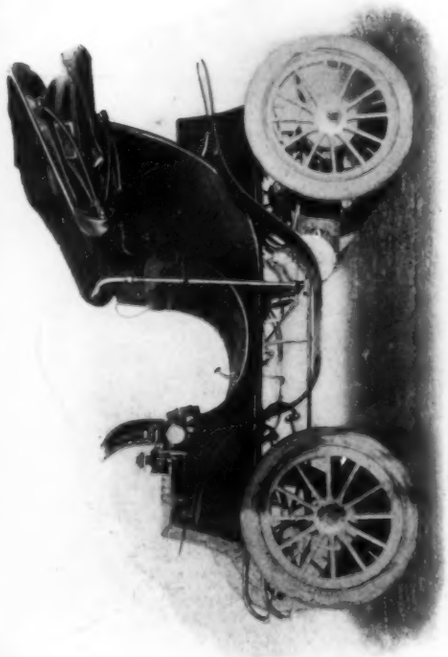
APPERSON LANDAULET, 50-H.P., 4 CYLINDERS, PRICE $5,600.
Apperson Bros. Automobile Co., Kokomo, Ind.



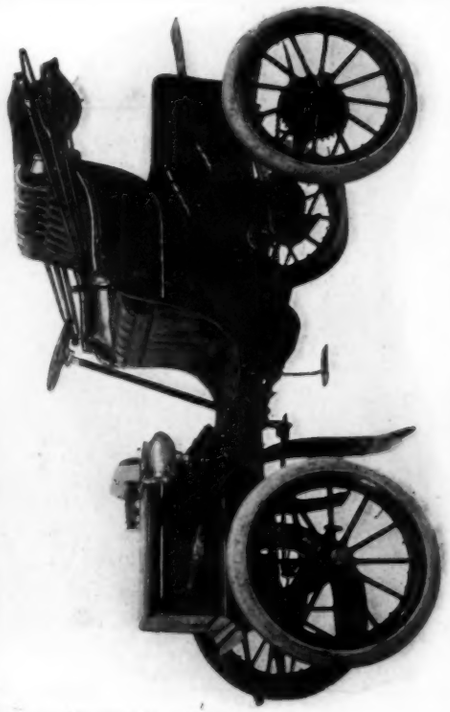
POPE-WAVERLEY MODEL 67 ELECTRIC VICTORIA-PHAETON,
PRICE $1,600.
Pope Manufacturing Co., Indianapolis, Ind.



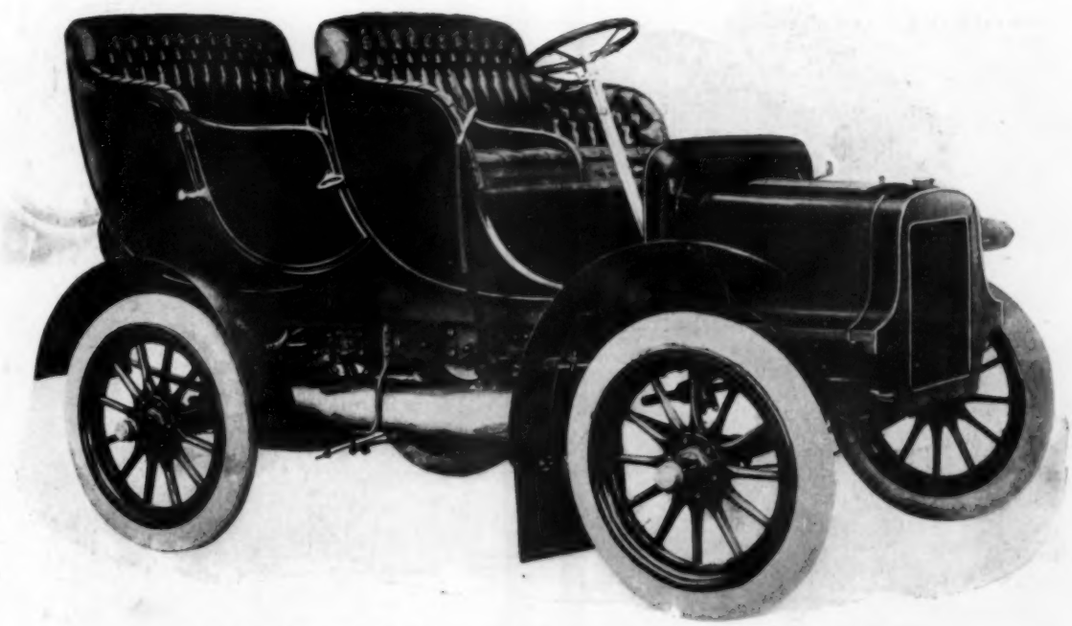
HEWITT RUNABOUT, 10-H.P., 1 CYLINDER, PRICE $1,000.
Hewitt Motor Co., New York City.



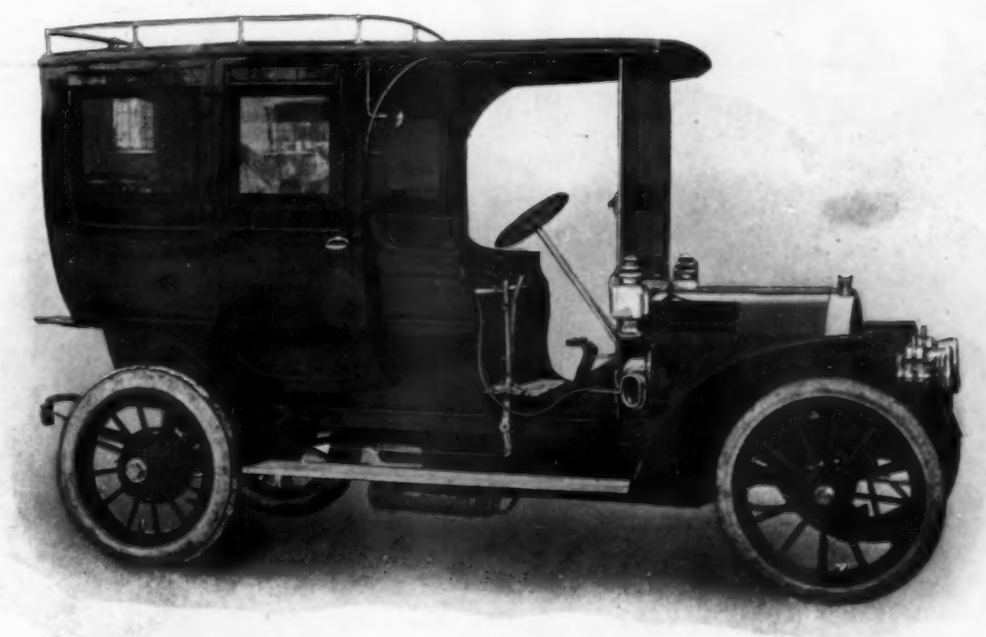
COLUMBIA MARK LXIX ELECTRIC VICTORIA-PHAETON,
PRICE $1,500.
Electric Vehicle Co., Hartford, Conn.



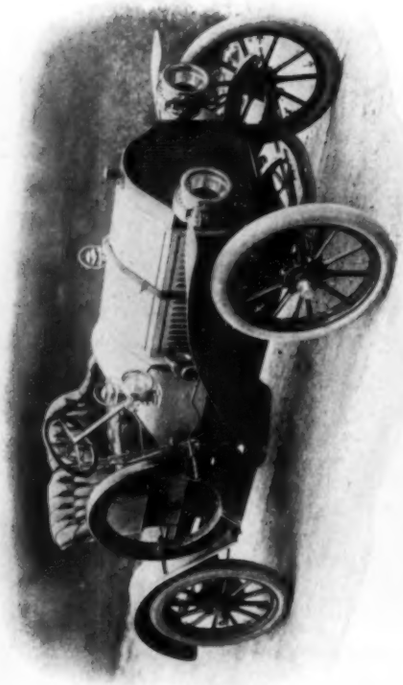
BABCOCK MODEL 5 ELECTRIC ROADSTER, PRICE $1,400.
Babcock Electric Carriage Co., Buffalo, N. Y.



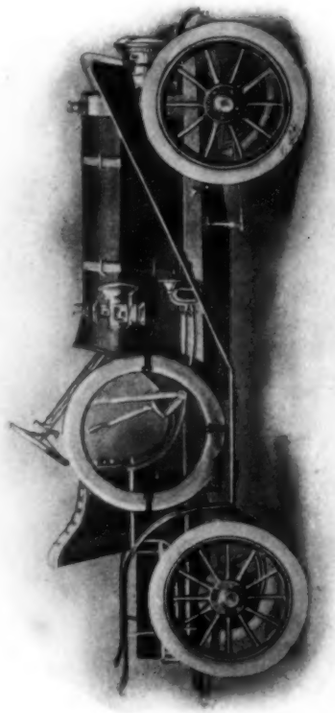
CADILLAC MODEL M TOURING CAR, 10-H.P., 1 CYLINDER, PRICE $950.
Cadillac Motor Car Co., Detroit, Mich.



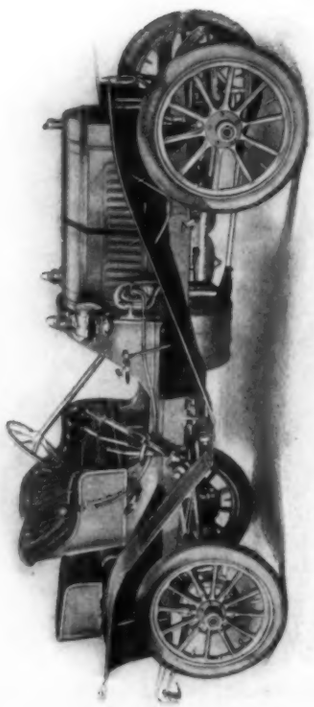
COLUMBIA MARK XLVIII LIMOUSINE, 24 TO 28-H.P., 4 CYLINDERS, PRICE $4,200.
Electric Vehicle Co., Hartford, Conn.



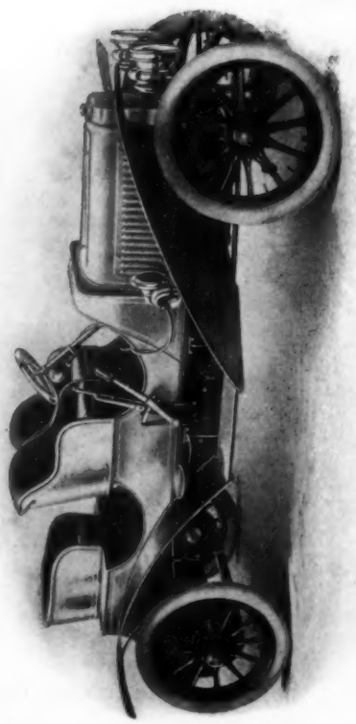
THOMAS "FORTY" RUNABOUT, 40-H.P., 4 CYLINDERS.
PRICE $2,750.
E. R. Thomas Detroit Co., Detroit, Mich.



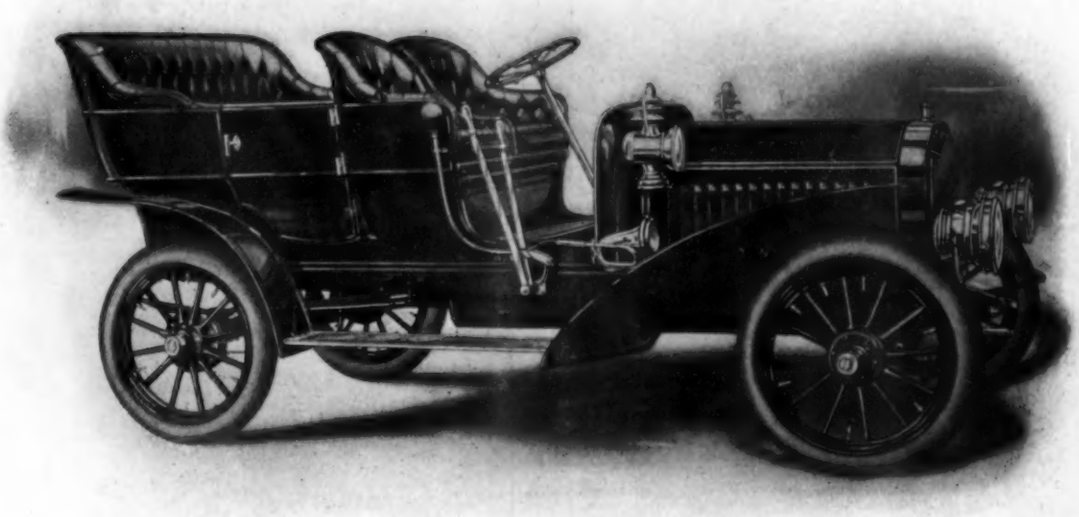
OLDSMOBILE RUNABOUT, 40-H.P., 4 CYLINDERS, PRICE $2,750.
Olds Motor Works, Lansing, Mich.



PACKARD RUNABOUT, 30-H.P., 4 CYLINDERS, PRICE $4,200.
Packard Motor Car Co., Detroit, Mich.

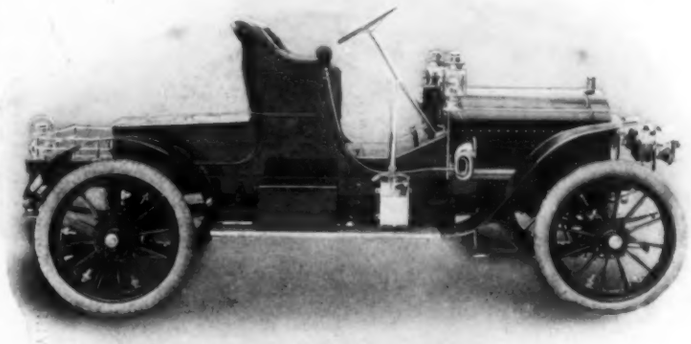


LOZIER RUNABOUT, 40-H.P., 4 CYLINDERS, PRICE $5,000.
Lozier Motor Co., New York City.

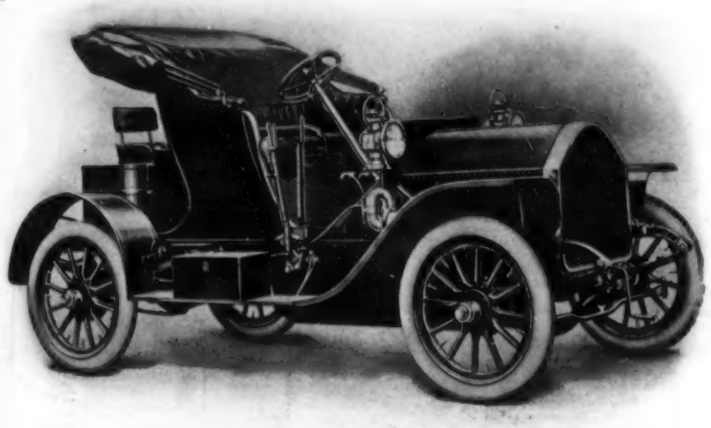


BUICK MODEL D TOURING CAR, 25 to 30-H.P., 4 CYLINDERS, PRICE $2,200.
Buick Motor Co., Jackson, Mich.

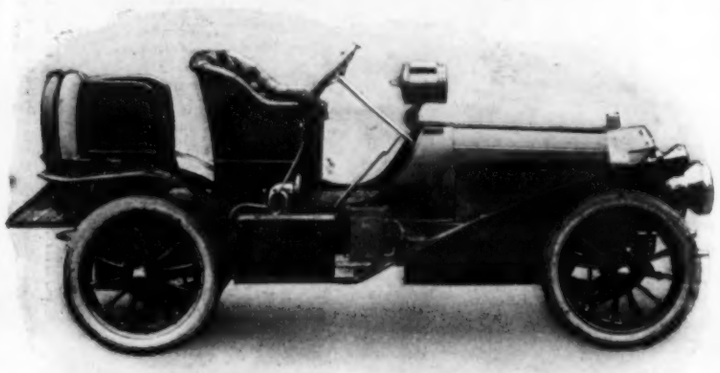
STUDEBAKER MODEL G TOURING CAR, 30 TO 35-H.P., 4 CYLINDERS, PRICE $4,000.
Studebaker Automobile Co., South Bend, Ind.



ELMORE TWO-CYCLE RUNABOUT, 24-H.P., 3 CYLINDERS,
PRICE $1,750.
Elmore Mfg. Co., Clyde, O.

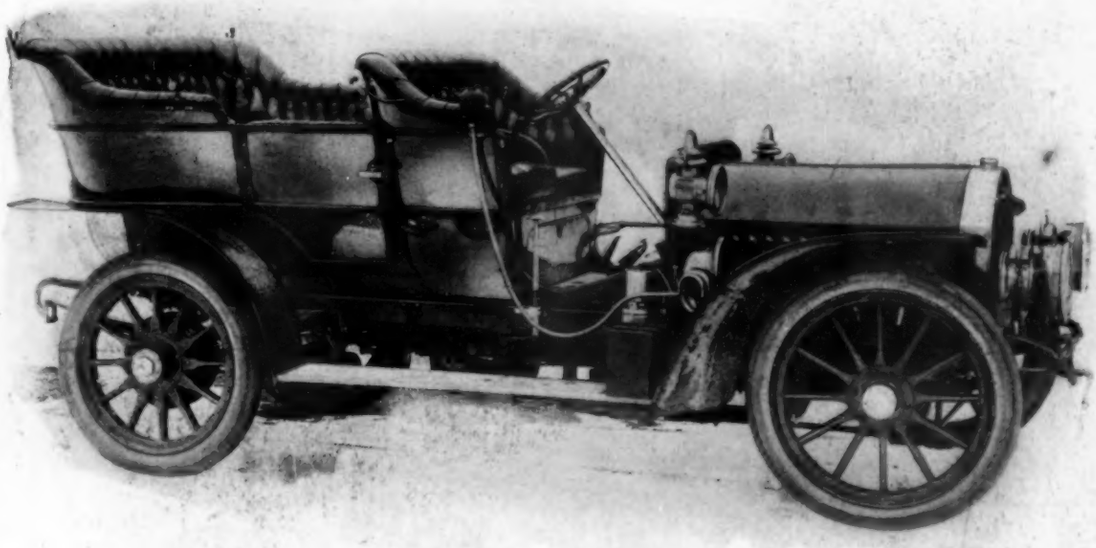


KNOX MODEL H STANHOPE, 25 to 30-H.P., 4 CYLINDERS,
PRICE $2,500.
Knox Automobile Co., Springfield, Mass.

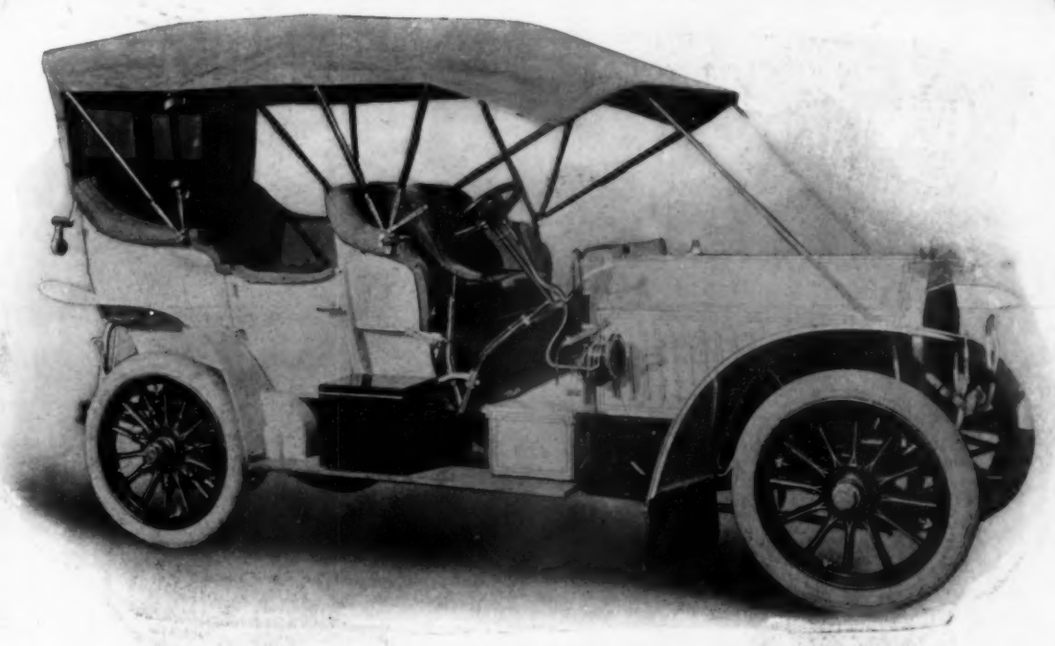


HAYNES MODEL S RUNABOUT, 35-H.P., 4 CYLINDERS,
PRICE $2,400.
Haynes Automobile Co., Kokomo, Ind.

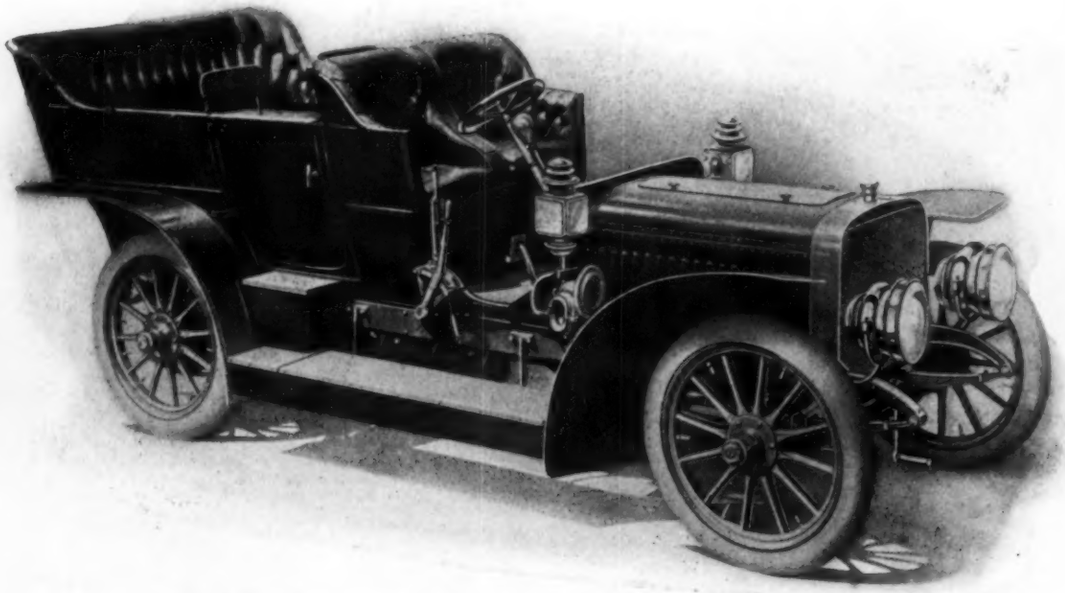
CADILLAC MODEL K RUNABOUT, 10-H.P., 1 CYLINDER,
PRICE $800.
Cadillac Motor Car Co., Detroit, Mich.



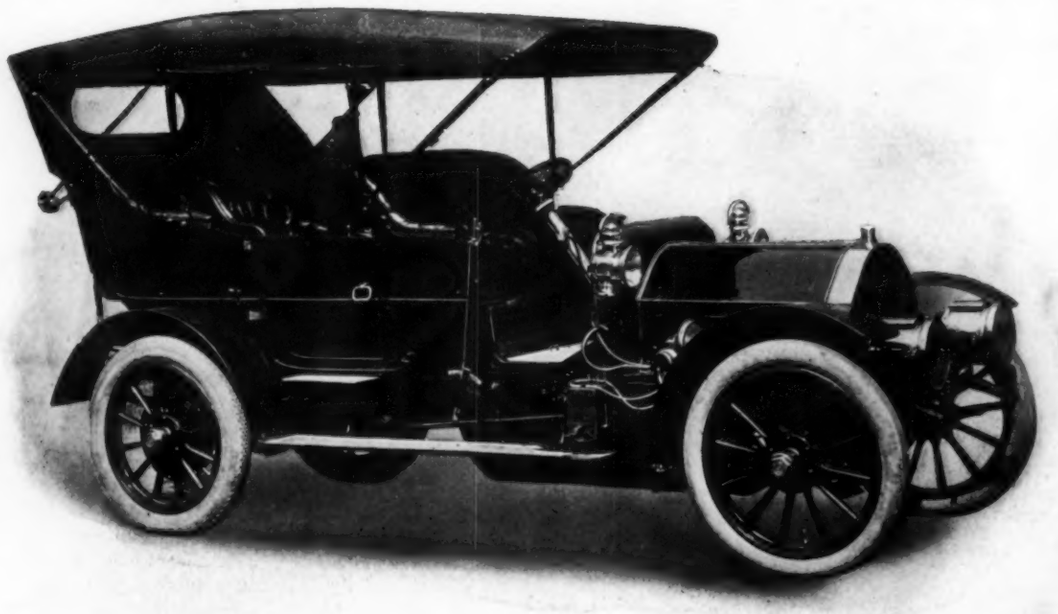
COLUMBIA MARK 66 COMBINATION GASOLINE-ELECTRIC TOURING CAR, PRICE $7,500.
Electric Vehicle Co., Hartford, Conn.



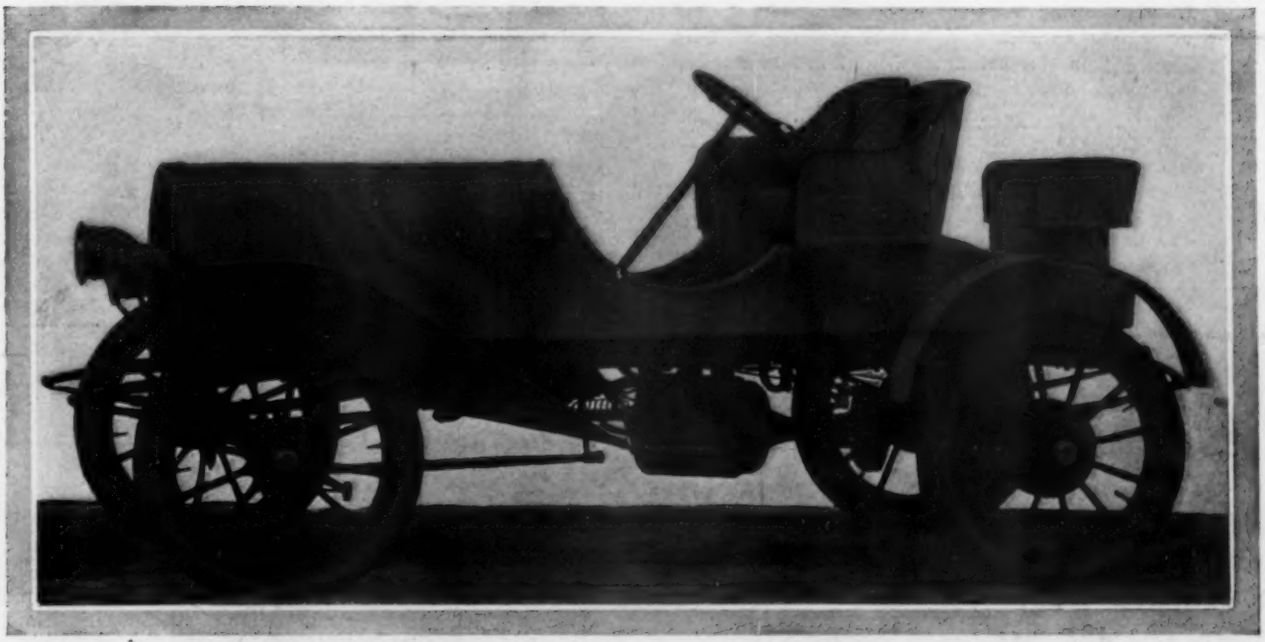
PANHARD TOURING CAR, 50-H.P., 4 CYLINDERS, PRICE $8,050 (CHASSIS).
Smith & Mabley, Inc., New York City.



LOZIER TOURING CAR, 60-H.P., 4 CYLINDERS, PRICE $7,000.
Lozier Motor Co., New York City.



PIERCE GREAT ARROW TOURING CAR, 40 TO 45-H.P., 4 CYLINDERS, PRICE $5,000.
Geo. N. Pierce Co., Buffalo, N. Y.



BAKER SHAFT-DRIVEN ELECTRIC ROADSTER A LA RACEABOUT, WITH BATTERY UNDER THE BONNET.

THE FIELD OF THE HORSELESS ELECTRICS

LUXURY of appointments, combined with mechanical simplicity and ease of control, are the chief characteristics of the electric vehicle, and they are exemplified in no small degree by the cars now on view in this section of the show. It goes without saying that they represent the product of the best known makers in their line in this country, if not in the world, for the American-made electric vehicle has gained prestige abroad as well as on this side of the Atlantic. The motive power really forms so small and apparently so insignificant a part of the up-to-date electric vehicle that it is scarcely to be wondered at that the ingenuity and lavish disregard of expense displayed in the fitting of the interiors of this type of car should constitute their chief attraction. In all that pertains to the comfort of the occupants, as well as the manner in which both the fitting and finish are executed, it is evident that the builder of the electric vehicle found that the carriage maker had stopped far short of the attainable and had no difficulty in greatly surpassing him—a respect in which he also anticipated the body builder of the gasoline car, although the latter has since come abreast of him, there being little to choose between the appointments of the up-to-date limousine or other inclosed type of body, and the smart electric vehicle.

Where the purely mechanical side is concerned, no one realizes better than the electric vehicle builder himself that progress must necessarily be slow. But at the same time no one realizes the extent of the progress that has been made in storage battery manufacture within the past few years. It is difficult to talk of improvement in this respect to the layman without exaggerating things, and there has been so much misleading information given to the public on the subject in that time that makers have since refrained from calling the public to witness their achievements, except where the latter have been of a radical or revolutionary nature. Compound wound motors of low powers, but capable of standing excessive overloads for long periods, are still characteristic of the power equipment; but there has been more or less change in the manner of applying the power, which is to be noted in the increasing popularity of the single-motor, shaft-driven type of car. Barring these, and with a few well-known exceptions, most of the cars are chain driven, the former employing gears, which are, however, no longer in general use for this purpose on the ordinary type of electric pleasure vehicle. Another thing noticeable is the extent to which the evolution of the up-to-date gasoline car has aided the builder of the electric, the latter having been able to adopt many of the innovations introduced primarily as constructional features of the gasoline car.

Baker Motor Vehicle Co.—Baker electrics are probably typical of this, in that the *pièce de resistance* of the Baker exhibit is an electric roadster, which at first glance might well be taken for a gasoline car, so closely does its appearance approximate to the latter. It is planned on the lines of the modern high-powered gasoline runabout, with two bucket seats about the center of the wheelbase and the usual dickey seat behind, in this case to the extreme rear and behind the back axle. Steering is by the usual inclined wheel, the steering pillar also carrying the controller lever, the control being placed at the left hand of the car. Forward of this is what appears to be the regulation type of bonnet, sheltering the battery, though it would hardly be suspected of having been placed there for that purpose except upon investigation. Hung quite low and approximately beneath the center of the car in order to bring the center of gravity down is the power plant in the shape of a single electric motor direct connected to a propeller shaft driving the rear wheels through the medium of a bevel gear and live axle. In addition to this roadster, which represents an unusual attraction in the electric field, the Baker interests are also displaying a standard runabout, listing at $1,800; a brougham of new design and very attractive lines at $4,000, the option of a landaulet body also being given on the same chassis at the same figure. There is also a stanhope at $1,600 and a victoria at $3,000. The batteries in the smaller and lighter vehicles consist of 24 cells and 40 cells in the larger. All are equipped with pneumatic tires, varying in diameter and wheel size in accordance with the weight, the mileage ranging from 40 to 80 miles on a single charge.

Pope Manufacturing Company.—Pope-Waverley electric vehicles are shown in such a wide range of types that it is possible to find in this exhibit, which is one of the largest and most representative of its kind, a car adapted to any purpose within the range of the electric vehicle. The leading car of the exhibit is a dainty stanhope of special design, listing at $2,000. It carries a battery of 30 cells. The standard type of stanhope is listed at $1,400 and has the same battery, while a victoria-phaeton at $1,600 comes between these two. The last named also carries 30 cells of battery, the weight being equalized by placing 10 cells forward and the remainder in a rear compartment. Its body is a special design, on which a patent has been applied for, one of the features being the dropped sill or floor support, materially lessening the distance between the floor of the car and the ground, beside which the seat is broad and low. With the exception of the station wagon, which constitutes an attractive feature of the exhibit, all the types shown are equipped with 30 cells of Exide battery, this having 41, different types of varying capacity being employed in accordance with the needs of the car. As an option, the National cells are also offered. Both the two models of stanhope as well as the victoria-phaeton are equipped with a single motor of high overload capacity, driving the rear wheels through the medium of the special "herring-bone" type of gear, which has always been a distinctive feature of the Pope electric vehicles.

Cantono Electric Tractor Company.—Cantono fore carriages constitute a line which represents quite a departure from the regulation standard type of electric vehicle. As their name indicates, the motive power is concentrated on the forward truck or axle carrying the front wheels, which accordingly act as the drivers, contrary to the usual custom of driving the rear wheels, though in this case the forward wheels also serve for the steering in addition. Two types are shown, a fore-brougham with extension straight front and a fore-landaulet, both of which list at $3,500. Motors, batteries, controllers and all connections are self-contained on the front part of the car, the wheels of which are accordingly equipped with heavier tires owing to the extra weight and duty imposed upon them. They are equipped with 5-horsepower motors, have a 90 and 96-inch wheelbase, respectively, weigh 3,000 pounds in both instances, and are equipped with 44 cells of battery, giving an effective radius of 40 miles.

Babcock Electric Carriage Company.—Babcock is a name that has stood for electric vehicles in this country almost as long as they have been a feature of the automobile world, so that it is only to be expected that the vehicles turned out under this mark should be representative of the latest achievements in this line, both where electrical efficiency and refinement of detail in equipment are concerned. Prominent among the models specialized by the makers of this line are to be found a stanhope at $1,650, a victoria at $1,600 and a roadster of special design at $1,400. The power plant consists of a 2 1-2-horsepower, specially wound, electric motor capable of standing excessive overloads for a considerable length of time, 24 cells of battery being employed in every instance, with the exception of the stanhope, which carries 40 cells. This keeps the weight down to an extremely low limit, the roadster tipping the scales at but 1,500 pounds, the victoria being only 50 pounds heavier, while the stanhope weighs 1,900 pounds. Such a ratio of power to weight spells efficiency, which is exemplified in the 100 mile radius of the specially designed roadster.

HOW THE MONSTERS LOOKED WHEN AT REST.

Electric Vehicle Company's models in all types have long been looked upon as standard designs in this field, and the exhibit made by the company reflects the high position it has occupied in the building of this type of vehicle ever since its inception. Its lines of cars of the heavier types is the most complete shown, including as it does a victoria, brougham and landaulet, beside which there is a private hansom—the only one staged. The vehicles all carry 44 cells of the Exide battery, of which this company is the maker, and are all listed at the same price, namely, $4,000. It goes without saying that in refinement of mechanical detail, which in the case of the electric vehicle is spelled in terms of mileage per charge more than anything else, as well as in luxury of appointments for the convenience and comfort of the passengers, these cars have been brought to a point where it is difficult for the carriage builder to carry his art any further. The line is completed by a light victoria-phaeton of special design, equipped with 24 cells of battery of a smaller capacity owing to the great difference in weight between this and such types as the brougham. It runs on pneumatic tires, as do all the other models as well, and is listed at $1,500.

Columbus Buggy Company.—Columbus electric vehicles are illustrative of what a really short step it is from the building of the horse-driven type of carriage to the electric, though on the other hand they likewise show in a striking manner how much the carriage maker's art has been advanced by the advent of the electric. The long experience in the manufacture of carriages enjoyed by these builders before entering the field of electric vehicle building proved the best possible kind of stepping stone for the latter; for, after all, the electric is the closest possible approach to the "horseless" carriage which the maker of gasoline cars found did not represent either a mechanical or aesthetic ideal upon which to build with the form of motive power at his command. Among the cars shown by this firm are a stanhope and coupé, listing at $1,600 and $1,900, respectively, and two surreys at $2,500 and $3,000. Twenty-four cells of battery are used in every instance, the effective radius being 40-75 miles in the case of the lighter vehicles, and 50-60 miles for the surreys.

Studebaker Automobile Company.—Studebaker is also a name that has long been identified with the building of electric vehicles for pleasure use, the amount of attention of which this branch of the many business interests of this firm is the recipient being well indicated by the great range of electric vehicles shown by it. In fact, the Studebaker exhibit, insofar as the number of styles shown is concerned, may well be put down as the most complete of its kind. In support of this, it may be mentioned that no less than six distinctive types of car are shown, ranging from a small runabout to a heavy surrey. Both this and the standard type of stanhope put out by this firm have a 67-inch wheelbase, with a weight of 1,650 and 1,565 pounds, respectively. Then there is a special stanhope on a 74-inch wheelbase; a coupé on a 68-inch wheelbase, and a special surrey. The runabout lists at $1,135, the stanhope at $1,275, victoria-phaeton at $1,775, coupé at $2,225, special stanhope at $1,675, and the surrey at $2,985.

AISLES ARE WIDE AND COMMODIOUS, BUT THEY ARE CONGESTED WITH PEOPLE AFTERNOON AND EVENING.

THE COMMERCIAL VEHICLES OF THE SHOW

By HOWARD GREENE.

DOWN in the basement of the Garden, below the main floor, are the commercial vehicles—those quiet looking workers whose claims upon the attention of visitors do not lie so much in their outward appearance as in their ability to do more and better work than horses—to "deliver the goods" both literally and in the popular parlance. The basement was never a beautiful place, notwithstanding the fine-sounding name of Exhibition Hall that has been bestowed upon it, its brick floors and walls and its bare beams and low ceilings giving little opportunity for decoration. For the present show, however, it has been transformed in a manner that was a decided surprise to visitors, the blue Dutch decorations on the walls having an exceedingly pleasing effect, somehow offsetting the low ceilings and making the brick floor seem quite appropriate. Plenty of light and the excellent arrangement of the exhibits, combined with the decorations, make the lower regions quite tenantable, and the comparative quiet is decidedly grateful to business men who want to talk over matters with the truck builders.

Among the commercial vehicles exhibited in the basement there is a variety of types that is a little surprising, in view of the comparatively small total number of cars of this class shown. Honors are about equally divided between electric and gasoline vehicles, there being three exhibitors of each, excluding one exhibitor of motors only. Steam is not represented. So far as the actual number of vehicles shown is concerned, the electrics have much the best of it, there being eleven of these to seven gasoline vehicles. What the latter lack in numbers, however, they make up in interesting features and in variety of types; the electrics show practically no changes from what seems to be well established practice, if exception is made of improvement in the quality of the materials employed and in constructional methods. There is a very general tendency to make bodies as solid and serviceable as those used on horse-drawn trucks—this having reference more especially to the heavier machines—and to refrain from the very unnecessary and expensive process of putting a high finish on a truck intended for rough work. As a consequence the big machines are mostly of rather sober and businesslike appearance, which is quite in keeping with their character.

Gasoline motors of a number of types are employed to furnish propulsive power for machines, big and little. The types represented are the four-cylinder vertical water-cooled, four-cylinder vertical air-cooled, single-cylinder horizontal water-cooled and double-opposed cylinder horizontal air-cooled. Transmission systems include both planetary and sliding gear change-speed mechanisms—a two-speed planetary gear being found on the heaviest gasoline truck in the show as well as on the lightest gasoline delivery wagon. In final drives are double chains, single chains and, what is something entirely new in American commercial vehicles, a propeller shaft and worm drive. In frames the big trucks, both gasoline and electric, prefer channel or I-beam structural steel, with the exception of one large gasoline truck, which uses a very heavy and deep pressed steel frame. In smaller vehicles angle steel and steel-flitched wood are much used. Three exhibitors, one of gasoline and two of electric machines, fit their vehicles to be controlled from the left hand side, considering this a decided advantage for a commercial machine, especially if it is to be used in dense traffic, where close maneuvering is necessary. Tires are of solid rubber in all cases, even on light machines.

Among the electrics familiar constructional methods are followed, batteries being underslung and motors carried in the rear, and driving through either gears or chains to a countershaft, and thence by chains to the rear wheels. In one instance the motor is carried behind the rear axle. For heavy vehicles two motors are the rule, a single motor being used in light models.

Franklin.—An extremely interesting vehicle is the one-ton gasoline truck shown by the H. H. Franklin Manufacturing

A LINE OF PACKARD DEMONSTRATORS ON FOURTH AVENUE.

Company, of Syracuse, N. Y. This is a platform truck with a four-cylinder air-cooled motor of 12-horsepower placed under the high driver's seat, where it occupies no space that could be used for loading, but still is easily accessible through large metal grill-work doors in front and removable panels at the sides and rear. The motor is exactly the same as that of the Franklin Model D pleasure car, and is stated to be quite as economical in commercial as in pleasure car service. Transmission is through disk clutch and sliding gears, with final drive by propeller shaft and worm gear. This arrangement gives a very high road clearance with a low gear ratio; the gear used is of moderate size and the worm drives from the top. The pitch of the worm is rather steep, so that when the car is coasting the gear can drive the worm. By the use of high strength modern alloy steels the car has been made very light, weighing about 2,000 pounds and carrying the same weight. The Franklin wood framing system is employed.

Knox.—The Knox Automobile Company, of Springfield, Mass., shows two "waterless" delivery wagons with double-opposed cylinder motors under the bodies, cooled by the familiar Knox porcupine system. No important changes have been made in these vehicles since last year, though advantage has been taken of recent developments in the manufacture of alloy steels to obtain additional strength without increasing weight. The most conspicuous Knox exhibit, however, is the new automobile chemical fire engine, which is shown for the first time. This machine has already been described in THE AUTOMOBILE, but it may be said that it consists of a standard Knox touring car chassis with 25-30-horsepower vertical four-cylinder air-cooled motor, with two 30-gallon chemical tanks of polished brass mounted on the rear, together with small hand extinguishers, lanterns, axes and the tools and small articles usually found on such machines. The speed of the machine has been found of very great advantage in getting to fires, and the car has proved, in actual service, to be entirely reliable. There is a rubber-covered platform at the rear for two men to stand on. Solid rubber tires are fitted to the artillery wheels.

Pope.—Two electric vehicles are exhibited by the Pope Motor Car Company, of Indianapolis, Ind., manufacturers of the Waverley cars. One is a closed delivery wagon and the other an open vehicle with a box body of the express type. Steel-flitched wood frames are employed. In each of these machines a single motor is used, this being the company's practice in light models, though two motors are used in heavy cars. The motor is suspended centrally in front of the rear axle, and drives through double gear reduction and side chains to the rear wheels. Exide or National batteries are used, suspended under the flooring in the usual way. Steering is by wheel, placed on the left hand side, and the motor-controlling handle is also on the left. Steering gear is of the rack and pinion type, and the wheel tilts. There are two brakes, one acting on a drum on the countershaft and the other an electric brake.

Studebaker.—The Studebaker Automobile Company, of South Bend, Ind., shows a line of four electric vehicles ranging from a very light delivery wagon to a heavy truck. The small wagon has a single motor driving to a countershaft and thence by chains to the rear wheels, while in all the larger cars there is a double motor system, each motor driving a short separate countershaft and a sprocket on each countershaft driving its rear wheel by chain. The Studebaker machines are controlled from the left hand side, wheel steering being employed in the heavy cars and side lever gear in the lighter models. These cars adhere, in the main, to the lines of last year.

Hewitt.—Three vehicles were shown by the Hewitt Motor Company, of New York, two being single-cylinder delivery wagons with inclosed bodies, arranged to slide backward to uncover the single-cylinder horizontal engine and planetary transmission gear, and one a 5-ton truck chassis. These cars are practically the same as shown last year at the Garden. The big truck, however, has been changed in some important respects. The general construction has been strengthened, and the vehicle, though rated at five tons capacity, is said to be capable of carrying seven or eight tons, the weight being 8,000 pounds. The motor, with four vertical water-cooled cylinders, develops 30-horsepower and drives through two-speed planetary transmission, propeller shaft and bevel gears to a countershaft and thence to the rear wheels by chains. The frame is a remarkably deep section pressed steel, and it looks fully equal to any load that could be placed on it, as do the springs, of the heavy truck type, semi-elliptic. Steering is by wheel on the left hand side, and the control wholly by foot, there being no side levers.

General Electric.—A number of electric motors and controllers of types used in commercial vehicles are shown by the General Electric Company, of Schenectady, N. Y., as well as several mercury arc rectifiers for converting alternating to direct current for charging storage batteries; the rectifiers were shown in operation, their weird bluish light attracting considerable attention. The motors, of various sizes, were of a kind used as standard equipment by a number of manufacturers of electric commercial vehicles, and, like most of the electrical equipment seen in the basement of the Garden, show little or no variation from lines followed for some time past.

General Vehicle.—In the vehicles of the General Vehicle Company, of Long Island City, it is notable that the pedestals heretofore used have been replaced by the more ordinary spring and shackle arrangement. These pedestals were made on the same principle as the blocks that guide the axles of a railroad car or engine in its vertical movements, and were characteristic General Vehicle marks. The manufacturers consider the more usual construction the best, and have therefore swung over to the majority.

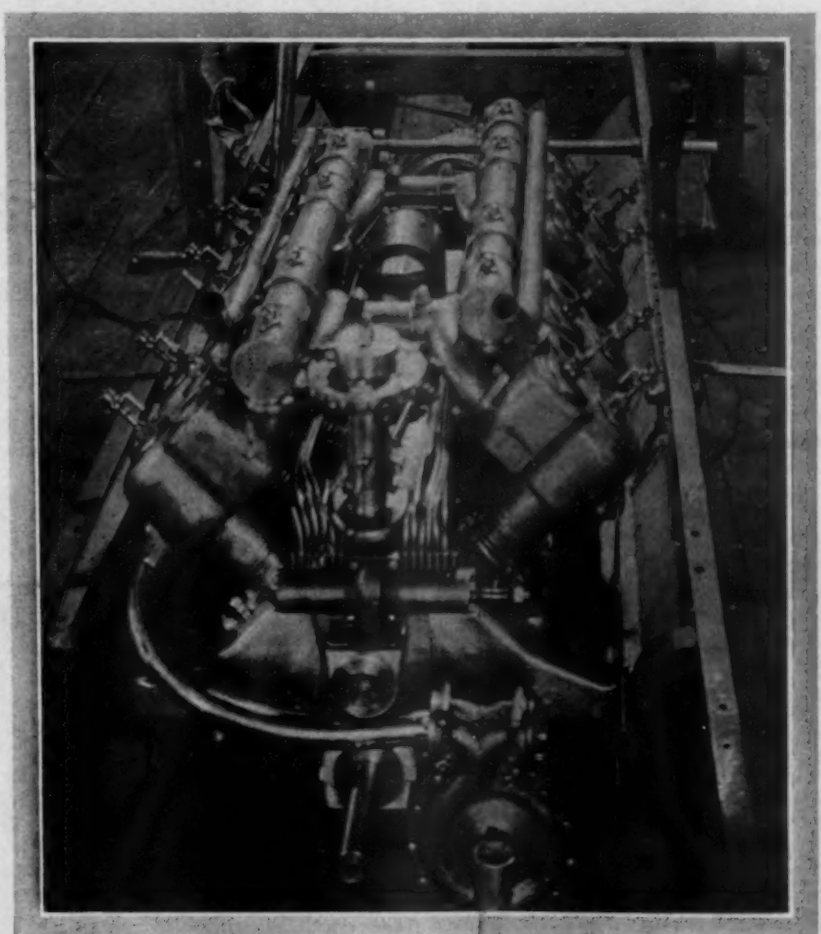
A REVERSE CONTROL THAT IS INGENIOUS.

Along lines that find much favor is the exceedingly ingenious arrangement of the reverse control on the new Hotchkiss selective gear system. Only two longitudinal slots are provided in the quadrant, there being no special slot for the reverse. By the usual forward and backward movement of the lever in the two slots, the four forward speeds are secured, while the reverse is obtained immediately behind the low-speed position, in the same slot. On either side of the slot at this point are raised edges, against which a latch normally abuts, so that the low speed cannot be overrun. By raising the latch, however, a further rearward movement of the lever is permitted, whereupon it locks in the reverse.

HEWITT UNCOVERS AN EIGHT-CYLINDER CREATION

IT was not until the complete list of makers who would exhibit at the Garden was made public that it became known that, while there would be no further additions to the advocates of the six-cylinder type of motor, there would be at least one representative of the eight-cylinder. This is the Hewitt 50-60-horsepower touring car, and, to judge from its external appearance with the bonnet down, it would never be thought to cover a motor having eight cylinders, as it is, in reality, inches shorter than a number of those on cars equipped with the standard type of four-cylinder motor. So far as the general design of the motor is concerned, Mr. Hewitt does not claim to have evolved anything startlingly new or radical, having taken the best standards of foreign practise as a guide.

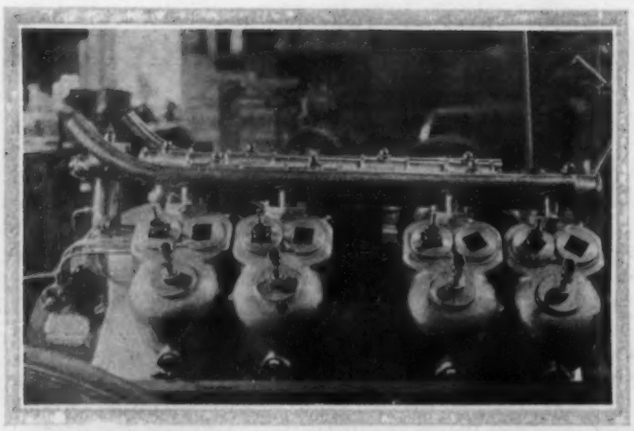
Thus the cylinder castings are separate with the valves on one side, the motor as a whole practically consisting of two four-cylinder units placed at 90 degrees to one another on a crankcase of special design. This arrangement of the cylinders and valves permits of the use of a single camshaft which is centered between the two motors inside the crankcase. At its forward end, as shown by the accompanying front view of the engine, it revolves an upright shaft through bevel gearing. This shaft carries a combined timer and distributer at its upper end, and it in turn drives a series of small gear pumps of special design which are combined in the single multiple unit shown in a horizontal position close to the base of the standard surrounding the timer shaft. There are fourteen of these pumps, and each one feeds to a lead supplying one of the principal bearings of the motor, giving nine drops per revolution to each. From the other end of the gear driving the oil pumps the shaft is continued rearward and employed to operate the magneto which is centered on the crankcase midway between the cylinders, a universal joint being used on this driving shaft to compensate for any relative movement. The magneto is a Simms-Bosch of the Renault high-tension type, and its position renders a minimum of wiring necessary. The order of firing is the same as that of two four-cylinder motors, the second of which explodes in inverse order to the first. For instance, the cylinders on the right hand are numbered 1, 3, 5, 7, and the left hand four 2, 4, 6, 8, which makes the order of firing 1, 8, then 5, 4, and so on. The camshaft and its eight cams are integral.



FRONT VIEW OF MOTOR SHOWING IGNITION, LUBRICATION AND PIPING DETAILS.

The cylinder dimensions are 4-inch bore by 4 1-2-inch stroke, the motor developing its rated output of 50-60 horsepower at a comparatively low speed. The valves are 2 1-4 inches in diameter, giving a 2-inch clear outlet, and are covered with bronze valve caps, as are also the openings in the water jackets in the heads of the cylinders. The carbureter, which is of special design, is located between the right-hand units, considerable space having been left between the front and rear pairs on each side, the inlet manifold running down the center of the motor above the magneto. The flywheel is a basin-shaped, hollow casting about 16 inches in diameter, to which a spun steel cap carrying steel fan blades riveted to it is fastened. Complete, this flywheel only weighs about fifty pounds, and is made in this form to dispense with the necessity of a fan behind the radiator. An idea of the liberal dimensions given every part of the motor may be gained from the fact that the crankpins are 1 7-8 by 2 3-4 inches, though the motor complete only tips the scales at 590 pounds. Cooling is by means of a honeycomb radiator and centrifugal pump driven directly from the crankshaft.

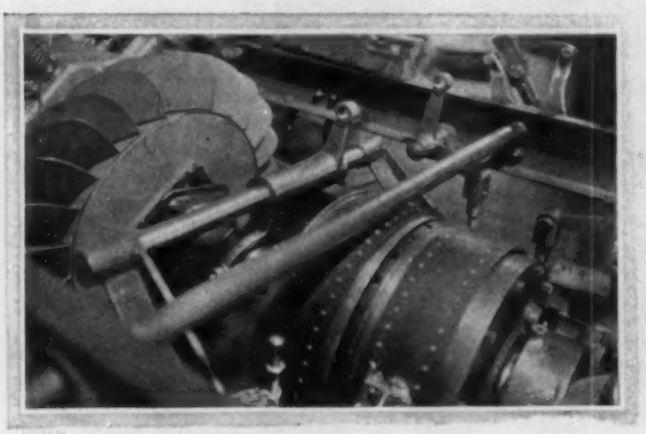
The two-speed planetary gear which constitutes the transmission is also designed on the same generous lines, its weight of approximately 100 pounds making up for the lack of avoirdupois in the flywheel, though the power impulses are so close together in an engine with this number of cylinders that there is no necessity for great weight there. As will be plain from the photograph illustrating it, this change-speed gear is carried longitudinally on the same sub-frame that supports the motor, final drive being by propeller shaft to a live rear axle. The steel constricting bands giving the low and reverse speeds bear against a series of fiber blocks slightly wider than the bands themselves and let into the periphery of the gear-containing case. The disk on the high-speed or direct drive bears against six helical springs let into the face of the gear box for a distance of about two inches, so that the motor is enabled to pick up the load very gradually regardless of the manner in which the clutch is engaged. An oil feed from the pump on the motor is carried back to lubricate the transmission. Control is by means of a system of interlocking pedals which may be locked in place



SIDE VIEW HEWITT SHOWING CYLINDER PLACING.

or released merely by the angle at which they are pushed, and which do not permit of the engagement of one gear without the release of the other, this being accomplished automatically. That is, when the car is running at any particular speed is not necessary to release the pedal corresponding to it before engaging another; merely depressing the latter throws the other pedals out of engagement before the new one can come into action. This makes a very effective form of control.

Light sheet steel is riveted between the main and the subframe throughout the entire length of the latter and the remainder of the mechanism is thoroughly protected by a steel pan which is readily removable. The differential is of the three-pinion bevel type, using nickel steel gears, this material also being employed in the crankshaft, valves, and other parts of the motor. The live axle is 1 3-4 inches in diameter and is supported on two 7-inch bearings. The wheels also run on very large bearings of the plain type, it being intended to replace these later with Timken roller bearings of large size. The differential case and rear supporting axle are stayed by a heavy strut and turnbuckle. The frame is of the usual channel section, pressed steel, heavily reinforced and stayed by cross braces. Brakes are fitted in drums on the rivers and are of the double internal expanding type. The wheelbase is 110 inches and 875 by 105 and 880 by 120 tires will be fitted front and rear, the car in complete running order tipping the scales between 2,900 and 3,000 pounds. Fitted with a standard type of touring body, the car lists at $5,500. Whether considered merely from the motor point of view or as an entity, the car is an unusually creditable production and should prove about as silent and smooth a running machine as it is possible to build. It was rushed to completion for the show and further refinement of design will undoubtedly be made later.



HEWITT FLYWHEEL AND TWO-SPEED PLANETARY GEAR.

LIGHTING THE ROAD AHEAD.

Badger Brass Manufacturing Company.—The makers of the lamps "that show the way," have a stand full of the Solar acetylene headlights for the delectation of the autoist, who makes a round of the accessory makers' stand, to get pointers on the equipment of his car for the coming season. Correct design along lines calculated to produce the highest degree of efficiency coupled with satisfactory service, together with the long standing of these lamps on the American market, places them in the foremost rank.

R. E. Dietz Company.—As makers of lamps years before the automobile became a factor, at first the auto lamp business of this concern was but a small side line, but the demand for their special types has been so great that it has now developed to a point where it forms a very important part of their total output, as may be judged from the elaborate array of styles shown on their stand. All their lamps are built on the Sterling cold-blast principle, their limousine square models, for 1907, being particularly attractive.

Edmunds & Jones Manufacturing Company.—"E & J" lamps are the product of this firm, and their long standing in the automobile world is well reflected by the assortment of up-to-date styles they display. They have made a specialty of acetylene headlights, along original lines and their output has become so extensive within the past year or two, that the E & J lamps are known the country over.

Gray & Davis.—"We have always set the style," say Gray & Davis, in introducing their new model square carriage lamp type, for the season of 1907, which forms a prominent part of their exhibit. They have been vehicle lamp builders for a number of years back, so that it is easy for them to show how history has repeated itself in the evolution of the G. & D. lamp. In 1898, the two-light square carriage lamp of the candle type, was the vogue and remained so for some time. Then the automobile appeared on the scene, and for it something on the lines of the Continental locomotive headlight, which later grew into the "Bullet" type and then disappeared in favor of the square style now so much in demand.

C. T. Ham Manufacturing Company.—"Ham's famous cold blast lamps," is the slogan of this concern, and it is well reflected by the generous showing of various styles and types for different purposes that is spread out for the benefit of the visitor. Some of these to which attention is called, are the "Corona," the "Tourist," the "Apex," and "Monitor," all of them being adapted to burn kerosene oil, and are guaranteed to be of the type that neither jars out nor falls to pieces under any provocation.

Rushmore Dynamo Works.—Though its name was slightly misleading at first, this firm has become so well-known to the trade and the autoist generally, that its equivalent in the shape of acetylene searchlights and generators needs no introduction. The special system on which both the headlights themselves and the generators of acetylene gas are constructed, together with a painstaking effort to give the buyer the very best value that can be produced at any price, makes a Rushmore an investment that pays well in the end, though the initial outlay may be greater.

Rose Manufacturing Company.—"Neverout" lamps date back to the heyday of the bicycle, and thousands of them still adorn bicycles at this day, though the number of automobile headlights which have been produced in the interim, outshines them many to one. They are shown together with the well-known "Neverout" patent invertible safety gas producer.

Manhattan Lamp Company.—The chief model placed on display by this firm at its stand is their new flare front, all brass searchlight, which has just been placed on the market. They are made in sizes ranging from six to nine inches, equipped with both the stationary and swinging bracket supports. Other styles shown are French models, and the extensive line of marine lamps for which this house has long been famous, all of which are put out under the well-known "Saxon" trademark.

ONE CORNER OF THE GARDEN TIREVILLE.

ANOTHER SECTION OF ACCESSORIES GALORE.

WHAT THE TIRE MAKERS HAVE TO OFFER

TO the casual spectator the numerous exhibits of tires present much the same appearance year by year, and even those more deeply interested see on the surface but little that is new. The exhibits include, as a rule, a number of tires of the different standard patterns, several mounted wheels displaying the tires in place, and sections of tires showing the construction. So far as form and general method of tire construction are concerned, there is little change from year to year, but it must not be inferred that the tire makers are idle. The more stringent requirements of car users, due to increased weight and speed and more general use over roads of all kinds, keep the tire men busy in and out of season. Except in certain details, the result of this work is not visible at the show; it can only be appreciated by the user on the road.

The complete tire exhibit of 1907 includes first the pneumatic tire for touring and racing, then its humbler companion, the solid tire for commercial work. An auxiliary feature which is each year assuming greater importance is the "detachable rim," so called, which may as well be divided now into the two classes which it naturally forms; first, what may be called the "demountable" type, in which the rim is taken apart to admit of the removal of the tire; second, the "detachable" type, in which the entire rim is separable from the felloe, or from an inner rim, being removed with the tire in place and immediately replaced by a spare rim with tire inflated on it. This new type, first heard of a year ago in the Continental races and seen here this year in the Vanderbilt Cup race, is rapidly coming to the front, many inventors being busy with it. Several examples are seen at the show, with others of the demountable type.

Ajax-Grieb Rubber Company.—Quick change tire devices are receiving much attention from the inventor. It is generally admitted that for touring purposes the best device is one allowing the outer flange to be removed, to give an easy change of inner tube; for racing a dismountable rim, allowing an inflated tire fully mounted on its rim to be substituted for a burst one, is essential. Both cases are provided for by the models just brought out by the Ajax-Grieb Rubber Company. The dismountable outer flange is held in position on the rim by a spring band 1-2 inch deep and 1-4 inch wide, slotting into a groove on the fixed and movable rim. To dismount, it is only necessary to remove a small safety wedge, fitting up the opening between the two ends of the spring band, contract this latter by means of a small lever and knock off the rim. The racing model is based on the same principle. The road wheel carries a fixed metal-faced rim with its inner edge raised. A movable steel rim, on which had been previously mounted a complete tire, is slipped over this and locked against side movement by an expanding band, like the one just described. To prevent creeping, the fixed rim has three grooves, into which lodge projections on the movable rim. Bearing, however, is distributed evenly over the entire rim. With this type special countersunk security bolts are employed. Under ordinary road conditions a tire can be changed in less than thirty seconds. The manufacture of a tire is also shown at the Ajax stand, the process being complete, except for the vulcanizing.

Continental Caoutchouc Company.—The regular Continental line is supplemented by a new non-skid tire for both racing and touring, built up in such a manner as to hold the studs firmly within the body of the tire. A new pattern of corrugated tire with flat tread is shown, and also the heavy tires, 5 1-2 inch, of which the company makes a specialty for use on cars of exceptional weight.

Diamond Rubber Company.—The growing prevalence of the demountable rim has made evident the need for a special tire for such a construction, and this has been met by the new Diamond "quick-detachable" tire, of the flat-tread pattern and made with a very hard bead. Though specially made for the Marsh rim, this tire is guaranteed when used on three other special rims. There being no staybolts, a flap is built into the casing to prevent the bead rising under a side strain. The Marsh rim is shown, as fully described in THE AUTOMOBILE, also the Diamond inner tubes made without grain in the rubber. The other Diamond lines, including the wire mesh base and the side-wire type are shown.

Firestone Tire and Rubber Company.—The new safety universal rim is shown with changeable rings to fit contour of tire for all standard makes; the locking device of the split ring being simple and strong. The pneumatic tire of 1906 has been improved by the omission of the brass clips and the addition of a spreader which is controlled at the valve stem. A new standard clincher tire has been added since last year. The regular patterns of Firestone solid tires are shown.

G & J Tire Company.—The special section known as the

oval raised tread put out in 1906, with the tread oval instead of flat, giving an improved surface of contact, has proved successful in strength, durability, and efficiency and is continued as the standard line for 1907, both in the G & J and the Indianapolis Dunlop types. Specimens of the tires are shown, with the regular Midgley universal rim. The G & J motorcycle tires are also shown.

B. F. Goodrich Company.—The company's quick demountable rim, in universal sizes, is shown; the removable ring carrying a hook on each of its ends which engages in a slot in the flat rim. Without resort to lugs, clips, turnbuckles, screws and bolts, the tire is securely locked and all possibility of creeping averted. The clincher tires are also shown and the two styles of tread, the flat and the Bailey "Won't Slip." The Goodrich-Bailey is planned and made with a view to the solid anchoring of the studs so that they are held firmly with no tendency to work loose under the heaviest strains of hard roads and big loads. The Goodrich endless side wire solid tires for commercial vehicles are also shown.

ON THE RAISED PLATFORM, KNOX IN THE FOREGROUND.

Goodyear Tire and Rubber Company.—The regular lines of tires are shown, with little change from the high standards of the last few years. The demountable rim has been improved by a change in the locking ring, which is hollow and non-reversible; rings are provided for the Goodyear and the standard clincher tires. A novelty is the heavy tourist traction tire, just introduced, with a special arrangement of transverse grooves, spaced about three inches apart. This tire is built for hard work and wear, with a tread of half an inch of rubber, and the corrugations give increased traction in sand and mud. For a non-skid tire two circumferential grooves of square section intersect the transverse grooves.

Harburg Tire Company.—This American company handles the tires of the Harburg and Vienna India Rubber Company, of Harburg, Germany. The exhibit includes the usual line of clincher tires for touring and racing. The Harburg rim is of the detachable type; the steel rim holding the tire permanently and being itself removable from the main body of the wheel. In this way a pair of spare rims with tires not only in place but fully inflated and ready for use may be conveniently carried. In the event of a puncture the rim in use may be removed by removing four nuts and slacking two others, when the rim may be slipped from its bed on the felloe. The extra rim and tire are slipped in place, the beveled faces of the felloe and rim assisting this operation, and the six nuts set up, completing the operation.

Hartford Rubber Works Company.—The regular Hartford line is shown in its full variety, of course including all the most recent features of tire and rim artificing. The demountable rim has been improved by the addition of a small but important detail, a worm gearing in connection with the central boss of the right-and-left screw of the turnbuckle, making the adjustment easy and rapid and also self-locking, as the worm gear cannot reverse. The demountable rim is shown in connection with the Midgley all-metal wheel. An important departure is the new Midgley wire grip tread, a non-skidding device. Five separate strands, each a helical spring about 3-16 inch in diameter, of hard steel wire, are firmly bedded in the tread of the tire, completely encircling it. As the outer surface of each coil or spring wears off, it leaves a series of small steel staples projecting from the rubber and gripping the road surface. There is nothing to throw mud or to cut the road, and no mass of metal to heat and destroy the rubber, but only the large number of small parts, each doing its work. The universal feature of the demountable rim is now perfected, the rings being reversible to fit different patterns of tires.

E. Lamberjack & Co., Inc.—The famous French tire is shown in all of its many makes by the company which has taken over the entire Michelin agencies of this country. The Michelin non-skid and the corrugated flat tread are the two makes particularly put forward, the excellent satisfaction given by both being considered a sufficient recommend.

Morgan & Wright.—This exhibit includes the usual line of automobile types of the clincher and Dunlop types with various treads, the De Luxe tires, and, as a new addition, a line of solid wire-strengthened tires for commercial vehicles, of various patterns and sizes, single and double.

Pennsylvania Rubber Company.—In tires proper the regular Pennsylvania lines are shown with no material change from last year, but two important additions have been made in a non-skid tire and a detachable rim. The new tire is of the Samson type but with special details of construction by which the studs are bedded in the center of the rubber, the outside leather merely steadying the outer ends of the studs. The detachable rim is composed of two steel hoops, one carried permanently on the spokes or the felloe and the other slipping over it. The inner rim is made with several slots or indentations in its circumference and studs projecting from the inner face of the removable rim fit these slots. When the rim is pushed into place the studs enter the slots and the outer rim is moved about an inch around the inner rim, thus locking the studs in their respective slots. The inner and outer rims are now locked against turning by two bolts through the felloe and inner rim, after which the outer rim and tire remain a part of the wheel.

Swinehart Clincher Tire and Rubber Company.—A well-arranged exhibit shows the various forms of solid tire with wire backing, including a mammoth 7-inch tire of the twin type on its rim. Two tires which have been in service for two years under a light delivery wagon are shown. A testing machine is used to illustrate the small difference between the Swinehart solid and the ordinary pneumatic tires; a hand lever is so arranged that the pressure of the hand on a small part of the tire surface is equivalent to the pressure on the tire in actual service.

New York Sporting Goods Company.—A new form of spring wheel, just patented by W. E. Schneider, is shown. It has oblong blocks of rubber, being arranged on end diagonally between the inner and outer rims; the device is not yet ready for the market.

Aster Company.—The "Pneu Electric" tires are shown at this stand with the other imported goods for which the company is agent.

Electric Rubber Manufacturing Company.—The Panther tire is shown, a wrapped tread tire, the company giving good reasons for adhering to this method of manufacture. There are also the Panther corrugated flat tread tire and the Panther and M. T. inner tubes. For heavy vehicles there is the Dewes solid endless tire.

International Rubber Company.—The new universal demountable rim now shown is simple and strong and does away with all bolts, screws and similar fastenings; the special clamping rings being readily slipped into place and in turn removed with a screwdriver or similar tool. Both the Bailey tread tires and the wrapped tread are made by a process of curing at one single operation, with a great improvement in quality. The various patterns of the standard clincher and other tires are shown.

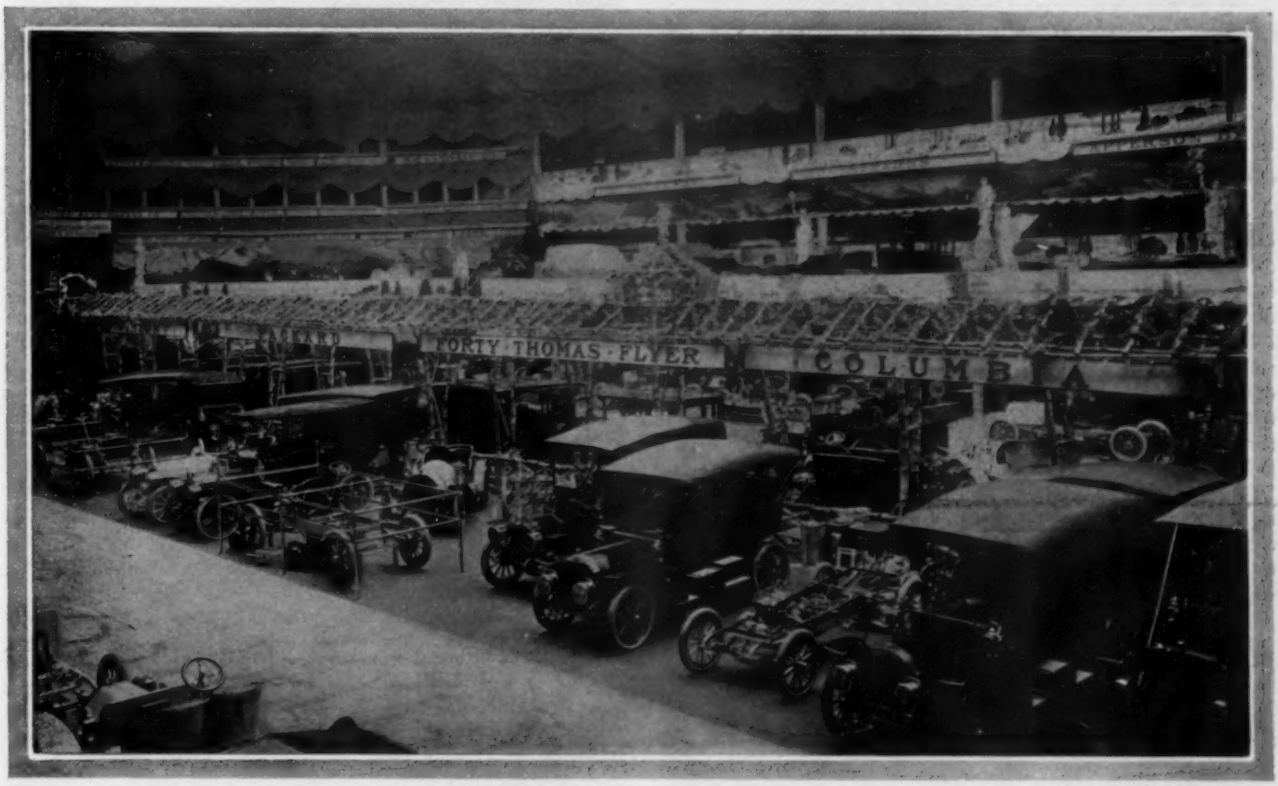
this exhibit includes a new demountable rim; the main rim and outer locking rim being held together by a split spring rim of U-section grasping the inner flanges of both.

Samson Leather Tire Company.—The usual variety of this noted non-skid shoe is shown, of a special leather armed with steel studs.

Consolidated Rubber Company.—The Kelly-Springfield solid tire is shown in various sizes; this well-known tire long since reached a point where it might be considered standard.

Dow Tire Company.—A demonstration apparatus is shown. A wheel with pneumatic tire running under pressure on a flat steel pulley; the wheel is punctured by wire nails, but holds its shape with no sign of deflation.

Fisk Rubber Company.—A new feature is the detachable rim; the fixed inner wire is made with a flange on the inner edge while the outer edge is beveled. A split ring of spring steel is beveled to fit the inner rim, being held in place by six



Leather Tire Goods Company.—The Woodworth detachable tread is a non-skid shoe of chrome-leather and canvas, strongly built, with steel studs passing through their broad, flat heads in contact with the tread of the tire. Hooks of sheet metal are riveted to the edges of the shoe and these engage a ring of steel wire on each side. These wire rings are not truly circular, but crimped, and, being of tempered wire, they act as powerful springs to draw the shoe over the tire. The shoe is put in place by deflating the tire, when the hooks may be slipped over the spring rings. When the tire is again inflated the shoe is fast. The shoe need not be removed in order to change tubes. The device is built to prevent puncturing, to lessen the wear and to prevent skidding. A still newer form of tire armor of the anti-skid type is formed of a series of leather straps, each studded with steel rivets and placed across the tire about four inches apart.

Republic Rubber Tire and Shoe Company.—The Hercules leather non-skid tires and tire protectors are shown.

Republic Rubber Company.—In addition to clincher tires

set screws. The outer rim with its tire is readily slipped on over the split ring, which is then expanded as the set screws are set up, wedging it out until the inner and outer rims are firmly locked together. Fisk tires are also shown.

Motz Clincher Tire and Rubber Company.—The Motz solid tire is intended for pleasure cars, to replace the pneumatic; a new pattern is shown, with the sides undercut to give increased resiliency and the tread divided by a deep circumferential depression. Special advantages are claimed on sandy roads and also against skidding.

R. & P. Traction Tread Tire and Tube Company.—The traction tread tire is designed with a broad, flat face and inclined edges, the face being corrugated circumferentially. It is claimed that a greater protection from puncture is obtained with no liability to skid. The R. & P. duplex emergency tube is a combination of double inner tube and valve, the innermost tube of all being used an ordinary puncture.

Trident Tire Company.—The Trident tire is shown in the ordinary round pattern and also the flat tread pattern.

THE POPE LINE INCLUDES TOLEDOS FROM TOLEDO, HARTFORDS FROM HARTFORD, AND TRIBUNES FROM HAGERSTOWN.

IN THE EXTENSIVE REALM OF IGNITION

MAKERS of ignition specialties are responsible for what appears to be such a bewildering array of devices, often put forth under varying titles, that the average autoist is prone to look upon this more as a realm of mystery than otherwise. But when things are condensed, it will be found that, as a whole, the subject may be divided into a comparatively small number of heads, though the subdivisions under each are apt to be numerous owing to the number of makers who specialize in different branches. For instance, to start at the bottom, there may first be considered that greatest of all essentials, the source of current supply. Batteries, dynamos and magnetos sum this up, though it is necessary to specify dry and storage batteries, varying types of direct-current dynamos with special systems of ignition, and low and high-tension magnetos, which are also of varying types, according to their makers, in order to cover the subject more fully. Then there are coils, and here, in a single word, a wide range of apparatus is included, for as is the case with many other things, there are coils and coils. Timers and distributers form a division that is equaled by few others for variety and novelty, and it is something in addition in which great advances have been made. Then there are special ignition devices that partake of so many different characteristics as not to be capable of classification under any one head. Last but far from least there are the spark plugs and cable for connections. How much of the increased reliability of the modern automobile is due to the efforts of the maker of ignition specialties can only be realized, and that not wholly, by looking back a few years and recalling what ignition accessories were then and see what they are now.

DYNAMOS AND MAGNETOS.

Dayton Electrical Mfg. Co.—This company show their famous Apple dynamo and complete ignition outfit. This includes a storage battery, automatic cut-out switch for charging the same, and a combined switch and volt-ammeter. They also display a complete line of other ignition sundries, such as coils, plugs, etc.

Motsinger Auto Device Mfg. Co.—The well-known "Auto-Sparker," which is a small direct-current dynamo with a special governor attachment, is manufactured and shown by this firm. This has been on the market for a number of years and has given excellent satisfaction for marine and stationary work.

Remy Electric Co.—This firm shows its full line of magnetos for both low and high tension service. They also display a line of magnetos with oscillating armature for use on large stationary engines. Both the high and low tension magnetos are the standard equipment of several well-known touring cars.

Pittsfield Spark Coil Co.—In addition to a full line of coils, commutators and spark plugs, this firm shows a new line of high tension magnetos which they have just put on the market. All the working parts are completely inclosed, and the machine looks very durable and substantial.

Albert Champion Company.—Among the complete line of accessories and automobile parts handled by the Albert Champion Company, the Gianoli high-tension magneto occupies an important position. Simplicity and the essential quality of durability are combined in the Gianoli. It starts readily and after reaching 500 revolutions per minute maintains a constant tension, no matter how great the speed, thus doing away with any chance of burning out secondary or puncturing condenser. "Electric" automobile tires, comprising round and flat pneumatic types, anti-skids and solids, manufactured by one of the most important French firms, are another important line. Champion spark coils, Nieuport spark plugs, insulated cable, etc., are a few more of the many features.

C. F. Splitdorf.—This well-known maker shows his usual line of coils and other ignition sundries. In addition to these this year he is showing a line of high tension magnetos, including a small one for motorcycles. In this line is included a complete double system, including coil and switch.

Holley Bros. Co.—In addition to a full line of carbureters, including many special types, this firm shows the Holley magneto, including a double coil for an alternative battery system. The Holley magneto is on original electrical lines, which it is claimed make it much more efficient at low speeds than the ordinary magneto.

Leon Rubay.—This exhibit fairly swarms with novelties. All of the Lacoste goods are shown, including coils and timers. The special features are a full line of the Lacoste magnetos in operation and a small gasoline generating set for lighting country houses. This plant is shown complete, including switchboard and storage batteries.

Lavallette & Co.—This firm is the sole agent for the Eisemann magneto and shows a full line of the various types of machines, most of which are displayed in operation. There is also shown, in connection with this exhibit, about every possible combination of double ignition, both with one and two sets of plugs.

Robert Bosch, N. Y., Inc.—The well-known Simms-Bosch magnetos for every service, from the high-tension machine for motorcycles to the large low-tension oscillating types for stationary units of high powers, are displayed by this firm. All of these are shown in connection with models adapted to be operated by hand, and the exhibit is remarkably interesting to a student of the subject.

Sibley & Pitman—Show a very complete line of ignition sundries of various manufactures.

AMONG THE BATTERY PEOPLE.

American Electric Novelty Co.—This company show the "Ever Ready" dry battery and other "Ever Ready" electrical goods, such as gauge and speedometer light, etc., which are too well known to require description. It has brought out a combined clock, speedmeter and odometer, very compact and known as the tourometer.

Eastern Carbon Works.—This firm displays its full line of standard dry cells and, in addition thereto, their new gas engine cell, which is especially designed for ignition purposes. The company is also showing a volt-ammeter which they warrant thoroughly.

Electric Storage Battery Co.—A complete line of vehicle batteries and ignition storage batteries is exhibited by this concern, their line being too well known to need description.

Franco-American Supply Co.—This concern displays the Look storage battery and also an extensive line of auto supplies, such as indicating bell pumps, Amco tire holders and the famous "One Minute" tire remover, which is demonstrated in a very satisfactory manner on the stand.

Gould Storage Battery Co.—These makers show a full line of their vehicle and ignition batteries. They are specially designed for the purpose for which they are to be used, and have been on the market for several years past, during which they have met with continued success.

Kitsee Storage Battery Co.—A full line of their sparking batteries are on view. For this type of cell special claims of lightness, large capacity and durability, as regards its efficiency, are made. Its neat carrying handle is a minor but noticeable feature.

National Battery Co.—A complete display of both vehicle and sparking batteries is shown by this concern. Their specialty is, of course, batteries for vehicle work, but their ignition batteries are well and favorably known.

National Carbon Co.—This firm makes the famous Columbia dry cell. Their line includes their standard dry cells and the special reserve dry cell. A special feature of this exhibit is the "Big No. 6" dry cell, which measures ten by twenty inches.

National Sales Corp.—In addition to a full line of sundries, the Royal battery, which had a number of interesting features, among which were a shock absorbing base, unspillable vent, non-corrodable binding post and automatic carrying handle, is shown by this firm. Their other lines comprise the Gaither-Owen carbureters and the Connecticut Telephone and Electric Co.'s coils and instruments, including the new gasoline dash gauge, introduced by the latter makers.

Semi Dry Battery Co.—The chief feature of this exhibit is the Jackson test board, which is designed to test ignition batteries comparatively under as nearly as possible actual working conditions. It is shown in connection with their special type of semi-dry cells.

Stackpole Battery Co.—This is a comparatively new concern, making its first bow to the public at a show this year. They specialize on five types of cells, each designed for a certain class of work, such as telephone, ignition and bell work, claiming that for each service a specially designed cell is necessary to obtain the most satisfactory results.

Vesta Accumulator Co.—This concern makes the Vesta accumulator, for which general all-around excellence is claimed. They also market an electric horn, which certainly speaks for itself, and also a very neat trouble-hunting lamp, which may be attached to the ignition batteries.

Witherbee Igniter Co.—The batteries "with the bee" are too well known to need any introduction. The complete range of regular types, which have undergone very little change since last year, is shown. A shock absorbing base of soft rubber has been secured to the bottom and this is said to add greatly to the life and efficiency of the battery.

COILS, TIMERS, DISTRIBUTERS, PLUGS, ETC.

Aster Co.—This firm exhibits a special French ignition wire made especially for high-tension work by the Société Industrielle des Telephones, of Paris. It is also agent for the Pneu l'Electric tire made by the same firm.

Atwater Kent Mfg. Co.—This firm shows its spark generator, which has been adopted as part of the standard equipment of a prominent touring car for this season. They also show a full line of their switches and meters. This season they have brought out a low-reading ammeter specially adapted for coil testing.

Autocoil Co.—This concern shows a line of coils of the interchangeable unit type. A specialty made by them takes

THOMAS SHOWS "FORTYS" AND "FLYERS."

the form of a coil box with an extra unit for emergency use. They also show a switch on the coil box to be used for changing over from battery to magneto, which is specially designed to be operated by the toe of the driver. Their four-unit coil, combined with a testing ammeter in the face of the case, is a recent specialty.

Other coil manufacturers are the Conn. Tel. & El. Co., the Byrne Kingston Co., the Pittsfield Spark Coil Co., and C. F. Splitdorf. These have been mentioned above.

T. Alton Bemus, Inc.—A specially designed distributer and timer, which is of the double-ball contact type, is shown by this manufacturer. As the only wearing parts on the contacts are the ordinary bearing balls, replacements can, if necessary, be easily and cheaply made.

E. M. Benford.—This maker shows a very complete line of mica plugs. A specialty is the racer plug, which is fitted in a tapered hole in the bushing, for which the mica insulator is a ground fit. This plug is fully warranted.

J. S. Bretz Co.—This firm shows the F. & S. annular ball bearings, of which they are the sole importers. This bearing is of the annular non-adjustable type and is provided with a separator and has special facilities for the removal and replacement of broken balls.

Byrne Kingston Co.—A full line of carbureters and mufflers for automobile and marine motors, of both the two and four-cycle type, is on display by these makers. In addition to this line, they also show a full line of coils which are designed on the latest and most approved lines.

Connecticut Telephone & Electric Co.—These makers have a complete line of coils and ignition sundries on exhibition, including a rather novel distributer and timer. One new wrinkle on its coil is the use of an adjusting screw with a graduated head. A novelty shown by this firm is a dashboard gasoline gauge, which is remarkably simple and effective in operation.

Duplex Ignition Co.—This firm shows the Duplex plug, the feature of which is the use of a small condenser contained in the porcelain of the plug and which will cause the spark to pass between the points, no matter how badly they may be fouled.

Heinze Coil Co.—These manufacturers show a complete line of coils, both for battery and magneto ignition. An interesting portion of this exhibit was a 24-inch spark coil in operation.

Herz & Co.—This firm shows a full line of its ignition specialties. It also shows the Paternoster shock absorber, for which it is the agent.

Igniter Appliance Co.—This concern shows the "Shur Fire" spark plug in actual operation, both with a magneto and battery, as a source of current supply.

Geo. Loring Co.—This firm shows the W. E. B. spark plug, for which it is the selling agent.

A. R. Mosler Co.—This firm shows a large line of special timers and distributers of its own manufacture. A novelty which it has just brought out is a combined porcelain terminal and plug protector.

Snutel Ignition Co.—A line of ignition apparatus of French manufacture, a rather interesting feature of which exhibit is a motorcycle coil that can almost be carried in the vest pocket, is displayed by this firm.

Uncas Specialty Co.—A very complete line of timers and distributers is displayed by these specialists. Two of their Leavitt distributers are shown constantly running, one in oil and the other in water. A specialty brought out this year is a roller type timer which has a special ground connection for high-speed work.

Wray Pump and Register Co.—The Lindsay timer and distributer is exhibited by this firm. This is remarkably compact, and a special point of novelty about it lies in the fact that it is protected with a heavy transparent glass cover.

LUBRICATION IS VITAL AND SHOULD BE THOROUGH

A. W. Harris Oil Co.—The various grades of special lubricants manufactured by this firm, such as the Excello gas engine cylinder, light-bodied cold test oil, A. W. H. gas engine cylinder, medium bodied; super gas engine cylinder, heavy-bodied; special super gas engine cylinder, extra heavy-bodied, and S. H. steam cylinder oil, each of which is shown feeding upward through glass tubes in order to illustrate the uniformity of its flow, and is also shown dripping on and flowing over a metal surface to enable those interested to examine the characteristics of the various grades. Beside these, there is exhibited trans compound, which is a fluid oil reduced to the consistency of grease for gear box lubrication.

John T. Stanley.—Special cleaning compounds put out under the trade names of "Mobo" and "Shofo" are the subjects of the exhibit of this manufacturer. "Mobo" is for the car and "Shofo" is to enable its driver to perform the same services for himself when grease and grime have become ground into his hands and ordinary soap and water are not effective.

N. Y. & N. J. Lubricant Company.—This firm makes a specialty of non-fluid lubricating compounds which are particularly valuable for winter lubrication when ordinary oils tend to get hard and stiff, though these non-fluid oils retain their consistency under any temperature conditions met with throughout the year. They are warranted not to drip, waste, clog or gum.

Havemeyer Oil Co.—Lubricating oils of varying flash points and fire tests especially compounded for automobile use are shown by this concern under the trademark of "Havoline," a name that is familiar to the average auto user owing to the success of these oils in continuous service.

Joseph Dixon Crucible Co.—Dixon and graphite have been synonymous terms for so long that the visitor knows what to expect when he sees the name of this firm's booth from a distance. The exhibit consists of the various grades of special graphite lubricants especially compounded for automobile work. In addition the type of brazing crucibles, now largely used by auto manufacturers, and Dixon's silica-graphite paint for metal are shown.

Adam Cook's Sons.—"Albany" grease, which is known the world over wherever machinery is used, is shown by this concern, who have been making this universally known lubricant for almost forty years. In connection with their exhibit they are distributing an interesting little pamphlet entitled "Auto Lubrication," containing considerable information of value to everyone who owns or runs a car.

Vacuum Oil Company.—There is probably no other firm in the business of manufacturing auto lubricants that has given as much attention to the subject of providing a special oil for each car on the market. The Vacuum Mobiloils, made in four grades, are each designed for a special purpose, and the company publishes an alphabetical list of American cars, giving the grade of oil recommended for use with it.

W. C. Robinson & Son Company.—This firm exhibits a full line of lubricating oils for every type of automobile and motorboat engine, as well as for general machine lubrication. They are put out under the trademark of "Autoline" oils, and are shown in a variety of grades and fire tests, each of which is compounded for a special service. A series of tests have been made of practically every machine on the market, so that the firm is in a position to recommend an oil for the user's car in every instance.

ONE OF THE MOST COMPLETE AND ARTISTIC EXHIBITS IN THE GARDEN SHOW IS THE BUICK DISPLAY.

TELLING HOW FAST AND HOW FAR

JONES SPEEDOMETER CO.—Jones, the man who builds speedometers, and has been building them since automobiles got to the point where they were fast enough to need them, calls for no introduction. He is always around when there is anything on, and he always brings his speedometers with him. History sayeth not, but somehow or other it seems as if Jones must have been the original man to show a speedometer in operation at the show. At any rate, he has them there now, lots of them, and the way the hand may be made to crawl steadily around the dial toward the "mile per" mark, or jump at it as if a policeman were coming along behind on a motorcycle, according to the way juice is fed to the little electric motor, is a sight that holds the visitor spellbound until he can almost imagine that he is at the wheel of the car that is running away.

Veeder Manufacturing Company.—Few things illustrate that old saw about the survival of the fittest better than the little Veeder—little because it was the smallest cyclometer that was put on the market. It was one of thousands, but, unlike them, it did not travel the same road as they and the bicycle did. Instead, it kept growing bigger, figuratively, until now it shines forth as the Veeder Tachodometer, though their predecessor, the cyclometer, is not forgotten as are its many competitors of bygone days. As has come to be the custom with this concern, its special instruments are all shown in working order. Standard cyclometers and a wide range of counters for various purposes are specialized by this firm.

Post & Lester.—In addition to its endless line of accessories, this firm shows the Stewart speedometer and mileage recorder. This instrument was designed by J. K. Stewart, president of the Chicago Flexible Shaft Company, a firm which for nearly twenty years past have made a specialty of flexible shafting. The case is a one-piece construction of heavy brass, highly polished and fitted with a four-inch silver-finished dial, the calibration being accurate and the figures so large that they can be read from the tonneau without difficulty. The scale reads from 5 to 60 miles, the delicate mechanism necessary to record very low speeds thus being dispensed with.

Charles E. Miller.—Following the plan adhered to with all the specialties that bear the Miller trade-mark, the Miller speedmeter was put to a thorough and lengthy test before being accorded this distinction. It is an extremely simple, compact and durable instrument, working on the principle of centrifugal force. The governor spindle is made from tool steel, hardened and ground to size, the flyball and links being of brass, making it very accurate and sensitive. Crown gears are fitted for driving and the large gear for attachment to the hub is made so as to be readily fitted to the wheel of any American or imported car.

R. H. Smith Manufacturing Company.—The same attractive exhibit that helped to show the merits of the Springfield Motometer at the Grand Central Palace last month has been impressed into service at the Garden, and the steadiness with which the indicators of the several instruments that are shown in operation maintain their positions at a certain speed as long as the driving motors keep turning at the same rate is illustrative of the fidelity displayed by these speed and mileage counters in recording the distance traveled and the rate at which it is covered. The Springfield is quite unlike the majority of its competitors where appearance is concerned, besides which it occupies a very small amount of space and forms a sightly addition to the dash of a car.

Warner Instrument Company.—The recording dial of the Auto-Meter strikes the visitor's eye long before he gets within reaching distance of the stand of its makers. It has a long-distance face, so to speak, and though its containing case is one of the smallest of the kind employed for the purpose, owing to the special type of operating mechanism employed, it can be read clearly at many times the distance the driver of a car finds himself from the dash, so that there is no danger of confusing the figures. Magnetism is the controlling force of the instrument and the makers guarantee to renew any Auto-Meter found to be so little as 1-10 of 1 per cent. incorrect at any time within ten years after sale, barring damage from accident or "tinkerites."

Winchester Speedodometer Company.—"Fine instruments for fine cars" is the motto of this concern, which is reflected in the character of its exhibit of speed and distance recorders. Centrifugal force is the basis on which the Winchester instruments are built, and they are built not only to do their work accurately but to last. In order to insure this before they leave the factory they are tested for accuracy for every mile of their range from one to sixty. Particular attention is paid to the driving, for upon this depends the service given. It consists of a flexible shaft made of wound steel English wire cable inclosed in a brass casing, the attachment to the case being from beneath, thus avoiding the objectionable short turn.

Oliver Instrument Company.—This firm manufactures the Index speed, trip and mileage indicator of the mechanical, cen-

trifugal type, which is the invention of E. C. Oliver, professor of mechanical engineering at the University of Minnesota. A vertical spindle carries an annular brass weight surrounding it and which ordinarily is maintained in an inclined position with regard to the spindle. Under the influence of speed centrifugal force tends to make it assume a position at right angles to the shaft, the motion being restricted by a spring bearing on a cam surface attached to the weight. According to its makers, the Oliver records everything but the events of a trip.

Hoffecker Speed and Mile Register Company.—Having been on the market for three years, the speed indicating and mileage recording instruments manufactured by this company are well-known to the automobiling public. The 1907 models have been improved in many ways to bring them to modern exacting requirements. One of the most interesting features of the new instruments for the coming season is a ball joint permitting of placing the dial at any angle to the dashboard of the car. The flexible cable is likewise so arranged as to overcome the objections hitherto urged against it in this connection.

Hopewell Brothers.—The Hopewell speed indicator is an accurate instrument, all the parts of which are made from a high grade of tool steel. It is made in two sizes, the smaller reading from 5 to 60 miles per hour and the larger up to 100 miles per hour. It is capable of reading to within half a mile on any part of the scale, as the distances are uniform throughout the entire range. The instrument was shown in operation by a specially tested machine, giving all the ranges needed, so that its capabilities may be readily demonstrated.

S. Smith & Son, Ltd.—This firm is displaying the only English instrument of the kind offered on this market and which is shown here for the first time. A very complete series of styles is produced by this house, ranging from the smallest and simplest type of speedometer up to a combined clock, speed, trip and mileage recorder and annunciator, all of them enjoying a high reputation in England and on the Continent. They are all made with that painstaking attention to accuracy and durability characteristic of their country origin.

Motor Car Specialty Company.—"Because it is all one instrument" is but one of the claims put forward by the makers of the Lea Speedmeter as a reason for its superiority. The odometer is not an attachment but an integral part of the apparatus. An isolated mechanism not affected by jars to the case, counterbalanced gearing keeping the needle steady under all circumstances, and non-slipping gears mounted on a square shaft, constitute but a few of the advantages that account for its accuracy and consequent long-continued popularity.

RADIATORS, DASHES, FENDERS, ETC.

Briscoe Manufacturing Company.—From plain coil radiators, suitable for small runabouts, to the largest type of honeycomb radiator capable of cooling a 100-horsepower engine, is the important line of the Briscoe Manufacturing Company. Plain coils, coils in casing, coils of small tubes, staggered gang fin, flat tubing, and honeycomb are the principal types, but each one of these is constructed in several forms, giving altogether an almost endless variety of radiating surfaces. Fans are made in two types, one with plain bearing, the other with ball bearing. Blades are made of aluminum and may be either four or six in number for each type. Briscoe hoods are as varied as are the requirements of automobile manufacturers. Fenders also show a wide diversity of appearance even among the standard styles, while any special shape can be made. Aluminum fenders are also manufactured if desired.

Whitlock Coil Pipe Company.—This company is showing the new type of Mercedes honeycomb radiator which was uncovered for the first time at the Palace show in December. It is constructed of square, air-tight cells, separated by thin horizontal and vertical water columns. They are also showing something novel in the shape of a line of seamless welded exhaust and inlet manifolds and water circulating branches, the latter being of copper while the first named is of steed.

The A. Z. Company.—Radiators, metal dashes, mud guards, hoods, mufflers, tanks, sprocket steps, mud aprons, spark plugs, pumps, fans, and other metal fittings for the automboile are handled by the A. Z. Company. Radiators form the most important line; these are of various types and of almost every conceivable shape. Three standard types are the tubular, constructed with a series of tubes, no matter in what shape, whether flattened, crimped or fluted, which individually connect two or more water spaces; the cellular or honeycomb, forming numerous cells around the tubes, no matter if the tubes be round, triangular or square; the coil formed by a tube or tubes bent or coiled, with the water flow through same. Hoods, upon which so much of the external beauty of the automobile depends, are constructed in a variety of designs. Fenders, too, are equally varied in the standard shapes and can be obtained of any special form on order.

Metal Stamping Company.—This exhibit consists of cellular radiators with hexagonal tubes let into punched metal plates front and rear. It also includes a large line of fittings of various kinds, such as bonnet latches, etc.

BEARINGS OF ALL VARIETIES.

Timken Roller Bearing Axle Company.—Several new types of Timken roller bearing for automobile construction, have been prepared for the present season. Timken bearings for cone clutch and transmission, for steering pivot, where they give much greater ease of steering, and for rear shaft drive are particularly interesting types. Excellent I-beam axles, drop forged steering knuckles, spindles, connecting rod arms, and steering arms were shown on the Timken stand. The following cars exhibited at Madison Square Garden are using Timken roller bearings: Apperson, Autocar, Buick, Columbia, Franklin, Haynes, Hewitt, Knox, Northern, Oldsmobile, Packard, Peerless, Pope-Hartford, Royal Tourist, Thomas, Winton.

Hyatt Roller Bearing Company.—The distinctive feature of the Hyatt flexible roller bearing is the roller made from a strip of steel wound into a coil or spring of uniform diameter. The greatest advantage of this type of construction lies in its flexibility, enabling it to present a bearing along its entire length. A line of contact, as compared with points of contact in other systems, constitutes the superiority of the Hyatt. This type has been applied to every part of the automobile chain-driven rear axle bearings, shaft-driven rear axle bearings, hubs, sliding gear, etc.

Hess-Bright Manufacturing Company.—Ball bearings, first used on bicycles, afterwards tried on automobiles and found bad, later modified and found excellent, are now being more and more widely adopted. The Hess-Bright Company earned a reputation in this line and still retains it with their different types of ball bearings. Full type, silent type, step and thrust bearings for light loads and high speeds, for main and line shaftings, street vehicles, electric motors and dynamos, cranes, hoisting engines, and pumps, are all distinct models manufactured by this concern.

J. S. Bretz Company.—The Fichtel & Sachs (F. & S.) annular ball bearings handled by the Bretz Company, consist of two concentric rings or races, grooves in the races, steel balls running in the grooves, and a cage containing and positively separating the balls equi-distantly and keeping them in perfect alignment. This bearing is constructed of steel of an exclusive analysis. The F. & S. bearing is furnished either in the "silent" or "full" type. It may be employed as a radical bearing, taking the load at a right angle to the shaft, or as a thrust bearing by mounting to take the load parallel with the shaft.

SHOCK ABSORBERS ADD TO AUTO COMFORT

Diezemann Shock Absorber Company.—This concern shows a shock absorber which depends for its action on friction. This is obtained between a steel and fiber disk, lubricated by a liberal supply of Albany grease, which is contained within the casing of the device.

Hartford Suspension Company.—The Truffault-Hartford Shock Absorber is perhaps the best known of all shock absorbers, since it was the first to be introduced to this country. It is exhibited by this concern, which certainly has reason to be proud of its past performances. It depends for its action upon friction between disk-like surfaces, automatically lubricated by a special process according to the demands made upon it.

P. M. Hotchkin.—The Hotchkin Anti-Jolt Device depends for its action upon the principles of hydraulics. A cylindrical casing is divided into two parts by a radial partition, which is fixed and another to which an exterior arm is connected through a central axle. This part of the device is mounted on the axle. It is connected to the frame by means of an arm attached to the outer end of the axle of the device and a link. A fairly large check valve allows free downward movement as far as the device is concerned, but the rebound is controlled by means of a needle valve, which may be adjusted to suit varying weights of car and road conditions.

Gabriel Horn Manufacturing Company.—This concern shows the Foster shock brake, which consists of a small cylinder and piston, interposed between the axle and the frame of the car. The dampening effect is obtained by the flow of oil from one side of the piston to the other, controlled by means of a by pass.

Graham and Goodman, Incorporated.—This concern exhibits the Graygood Hydraulic Shock absorber. It consists of a small cylinder, closed at one end and having a stuffing box at the other, through which a piston rod works. At its inner end there is an opening in the piston connecting both sides of the cylinder. The size of this opening can be regulated by a needle valve which extends through the piston rod. This allows of easy adjustment for various weights of cars, as well as for varying conditions of service.

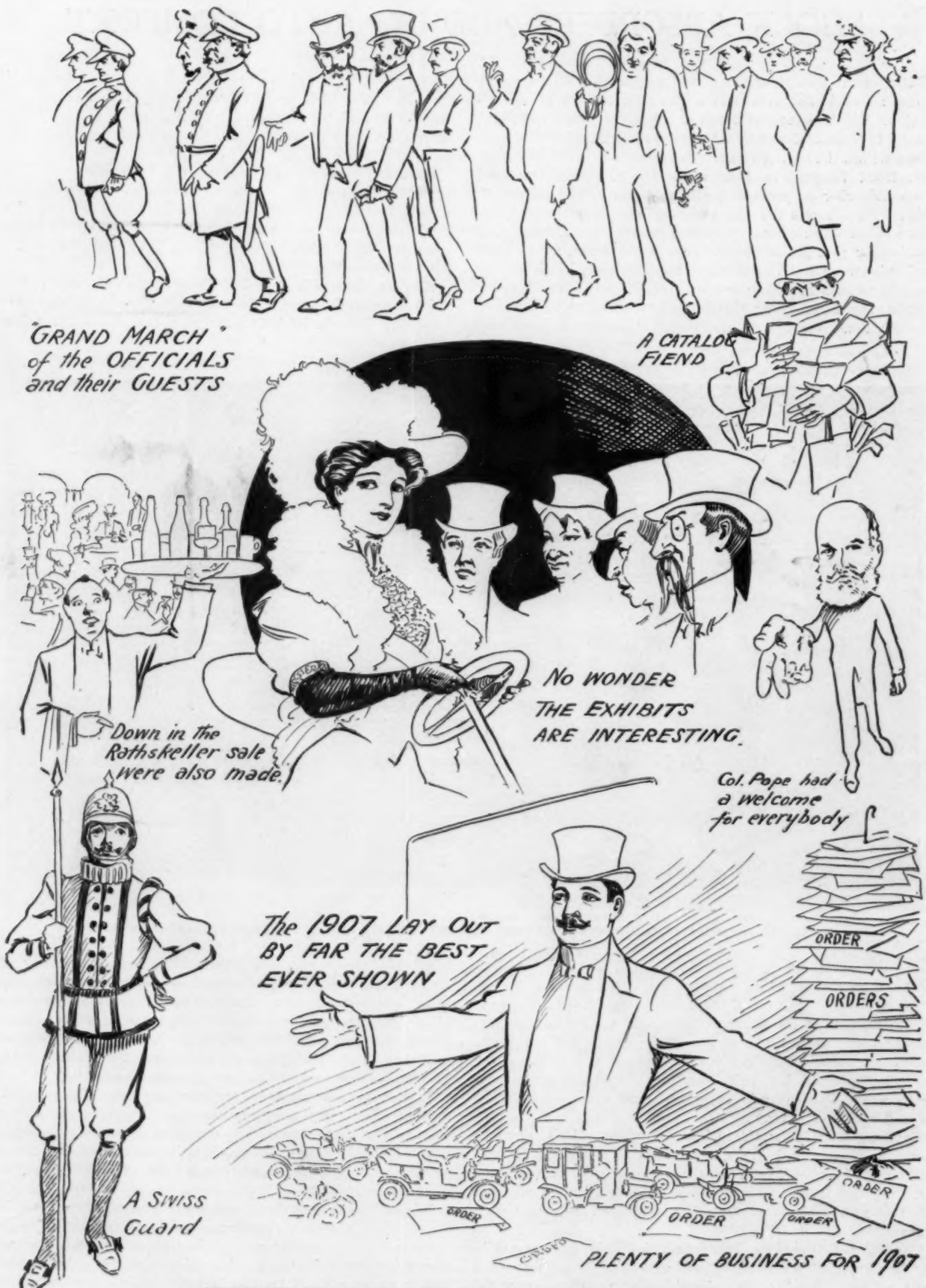
Herz & Co.—This firm exhibits the Paternoster shock absorber. This is a device which depends for its "dampening action wholly on friction." It operates through a pair of steel brake bands contracting upon steel drums. These work in a bath of glycerine. It is made so as to be adjustable for both up and down movements.

Kilgore Auto Air Cushion Company.—This concern has the distinction of showing the only pneumatic shock absorber in the show. This device is so arranged as to check both the downward and upward shocks, and is also arranged so that this checking effect is graduated according to the amount of movement in either direction. The principle is that of interposing an elastic cushion between the axle and the body of the car, its tension or resistance being adjustable to exactly the point required to efficiently absorb every jar, so that it is not stiff and unyielding with the car light and too soft when loaded.

ESSENTIAL ACCESSORIES AND INVITING SCENERY AND THE EXHIBIT OF THE ROYAL MOTOR CAR COMPANY.

J. H. Sager Company.—This company shows its equalizing springs. These are a sort of supplementary springs which are used to check and control the action of the regular springs on rough roads by counteracting excessive movement in either direction, without at the same time interfering with the free play of the main springs.

Vestal Shock Absorber Company.—This concern shows the Vestal shock absorber. It depends for its action upon a friction collar and drum, between which is interposed a soft and easily replaced leather or fiber ring. A special point about this device is that it allows a small amount of spring play before the friction device comes into action.



SOME VARIED IMPRESSIONS OF THE SHOW BY "THE AUTOMOBILE" ARTIST.

PRESENT AND FUTURE OF A GREAT INDUSTRY

BRIGHT is the present and promising the future of the growing automobile industry. Optimistic is the general tone of those engaged in manufacturing the motor-driven vehicle and its many component parts and accessories. Occasionally a skeptic is encountered, but he is only the exception that proves the general feeling of satisfaction at the outlook. In the opinion of many, automobile manufacture is only really begun in this country, and the quickness with which the outputs of the established concerns are sold to agents, who would not invest unless they were confident of the demand in their respective vicinities, tells its own story. Coincident with the coming of the automobile has been the pronounced call for the improvement of the roads, and this same rebuilding of the highways is going to result in the sale of many more thousands of cars, for the farmer is awaking to the value of the automobile, is buying now, and will buy in greater numbers in the near future. Read the comments of those in and out of the trade on the present and future of the greatest industry ever established in this or any other country.

DISTINCTIVE, STABLE, UNIQUE INDUSTRY.

By M. J. BUDLONG,

PRESIDENT ELECTRIC VEHICLE COMPANY.

The present status of automobile making certainly stands unique in the history of industrial enterprise. Twelve years ago hardly any automobiles were in use. To-day it is estimated that the value of cars in the hands of purchasers exceeds $200,000,000. On this side of the water this diversion of an immense amount of capital into a new channel has mostly taken place within five years, and so naturally and smoothly as to cause no particular stress in any direction. Now and then a purchaser may have mortgaged his house when he ought not have done so, but it is strikingly evident that the great majority of cars in use in the United States belong to owners who can afford to have them; and this fact points strikingly to the wonderfully prosperous condition of the United States at the present time. As for the future, the industry can look the new year in the face without flinching and all indications are toward prosperity for several more years to come. The advance bookings for 1907 deliveries break all previous records. Not only is the popularity of motoring keeping pace with the ability of the manufacturers to supply the demand for cars, but motorists are taking a more sane and conservative view of automobiling than ever before, which is an especial indication of the permanent stability of the industry. The principal obstacle in the path of recent progress has been accidents, 95 per cent. of which were purely avoidable. There is now everywhere manifest a tendency to frown down recklessness and the work of ignorant operators; and this perhaps more than any other one thing will make for rapid increase of sales in the future.

GOOD ROADS AND GOOD TRADE GO TOGETHER.

By ROBERT P. HOOPER,

CHAIRMAN A. A. A. NATIONAL HIGHWAYS COMMITTEE.

It looks to me as though the prospects for the sale of new cars will continue as long as the public is making money as fast as it is now. The point that is particularly favorable to all automobilists is the fact of the large number of machines that are being purchased by the farmers and all classes of people living in the outlying districts. Already we see a very marked evidence of a friendlier feeling toward automobilists than has ever existed before, and I believe that the automobile owners are working together to help add to this good feeling, to a very much greater extent than they have ever done before. Further, there is no doubt that the adoption of the automobile by the farmers has already created a demand for roads, which we could never have secured in any other way. We have no difficulty whatever, at the present time, in securing favorable expressions of opinion in regard to good-roads laws, and also promises of help from men that have been antagonistic to us for a long time past.

DEMAND INCREASING FOR GOOD AUTOS.

By H. M. SWETLAND,

PRESIDENT CLASS JOURNAL COMPANY, PUBLISHERS "THE AUTOMOBILE."

The outlook for the industry is most encouraging. The demand for well built automobiles of every description is increasing rather than diminishing. The sale is still hampered to some extent by unjust garage, repair and supply charges, but these accessories to the industry are being conducted on a more substantial basis, and the "get rich quick" factor is being slowly eliminated. Uniform standards of parts in the various types will now follow as in railway equipment, and better material and workmanship will mark the progress of the year.

The buyer is becoming educated and more discriminating, and cars of all classes will be selected with more consideration of adaptability to the special requirements. Touring cars will not be bought for runabout service, and runabouts will not be purchased for delivery vehicles, all of which will tend to the greater satisfaction of the purchaser. For all special services, particularly special commercial uses, automobiles will be constructed from plans and specifications in which the requirements will have been considered from a standpoint of advanced engineering.

The fact that the industry is on a sufficiently substantial basis to attract our most influential and progressive engineering ability, as well as abundant capital, is proof of the possibilities and permanency of the industry. We only need to continue high-grade construction in all lines, give the user honest consideration during his educational epoch, and avoid provoking drastic legislation by reasonable use of public property. The future then is beyond any question.

MAGNITUDE OF PRODUCTION A FACTOR.

By HENRY FORD,

PRESIDENT FORD MOTOR COMPANY.

American supremacy in the automobile industry must be won, as in other branches of international commercial competition, by following American methods and doing business on the scale to which we are accustomed, and which to our foreign competitors seems of almost impossible magnitude. In locomotive building, bridge construction, railway and steamship enterprises, and in other branches, Americans have outstripped all competitors by the magnitude of their operations. The scale on which we Americans do business is made possible by our faculty of reducing the most difficult and seemingly formidable problems to the simplest and fewest terms—by so designing that every operation from first to last will be as simple as may be and making as many parts as possible standard in form and size and therefore interchangeable. Strange as it may seem, an American bridge building concern can furnish an estimate on a bridge to span a river in South Africa, and need not even know the width of the river or the height of the banks. Three cents and a fraction per pound is the

price of bridges—the amount it will weigh depending on the various dimensions, which latter have long since been worked out and reduced to simple tables. Looks easy when you think of it, and yet our foreign competitors have never been able to reduce bridge building to those terms—nor to compete in estimating on a bridge job with Americans. In locomotives it is the same. Even watches come under the same head—and the automobile comes between the two, combining as it must the strength and power of the one, the accuracy of the other. Some years ago the Swiss government sent an emissary over here to investigate and report on the watch industry, the American product having then only begun to cut seriously into the revenues of the Swiss national industry. He was an honest emissary—and a worthy one, since he believed it better that his people should know the truth, even if that proved unpalatable, than a more toothsome fabrication which should in the end be expensively misleading. His report was to the effect that the Swiss attitude toward the American product was wrong. That the belief that the Yankee product was inferior as well as cheaper was a superstition born of racial prejudice. And he stated frankly that his investigations had shown him that the hand-made Swiss product could not even approximate the accuracy of the machine-made American watch. They must then adopt American methods or suffer in the competitive field. Result, watches made in Massachusetts are now sent to Switzerland, reshipped to America, and sold to Americans as "imported" time-pieces.

We have a very great advantage over the foreign maker even when he has adopted, as nearly as he can, our own methods. He cannot hire American workmen—men of a higher intelligence, because more self-reliant, self-respecting and more ambitious. It is a penalty the older countries must pay for long years of oppression and suppression of their people. The German is a better worker in America than he was in Germany, the Frenchman than in France, the Irishman than under British rule. We get the benefit of all that.

As for the future of the industry—that is assured. There is apparently no diminution in the demand, and as cars are made in greater quantities and prices correspondingly lowered the market is enlarged immeasurably. There has not been a month in the year that the Ford factory has not been behind its orders—this applies to our high-priced six-cylinder model as well as to the four-cylinder runabout. Perhaps that is due to our having adopted at an early date a policy which we knew the future would make necessary—I do not know. Anyway, I believe the industry has just begun to develop, and he would be bold indeed who should predict that the business has reached its zenith or that a serious decline will begin during the lifetime of men now living.

FUTURE ONE OF SPLENDID POSSIBILITIES.

By G. V. ROGERS,

SECRETARY MITCHELL MOTOR CAR COMPANY.

The subject of the automobile industry is one that, try as we will, it is impossible to view it in any other than the most optimistic light. It seems to us that the possibilities of the automobile have developed more, and have been more generally understood and appreciated, within the past twelve months than during its entire previous life. They are not only used to-day for work thought beyond their capabilities, but they are making undertakings possible that were undreamed of and impossible without their aid. In other words, their advent is creating a demand for themselves unknown heretofore, and the possibilities of which we can only dream. There is no doubt but that there is a shortage to-day and that the country could absorb twice the number of cars that will be made during the year of 1907. Within ten years it will be one of the four largest industries of the country with the most rapid growth, not even excepting railroads, that the world has ever known.

MORE DIFFICULT TO PRODUCE THAN TO SELL.

By ALBERT L. POPE,

VICE-PRESIDENT POPE MANUFACTURING COMPANY.

In the present state of the industry it is more difficult to produce good cars than to sell them. The demand is strong for such machines as have won in past seasons a reputation for dependability and efficiency, and at the same time purchasers are not easily attracted to makes of unknown quality. If this analysis is correct there certainly is a market for all the good cars of 1907. Without question the automobile business is firmly established, and pleasure vehicles will continue to increase in popularity and general use for some years to come, a condition of affairs that is bound to insure good roads throughout the entire country. By that time the commercial vehicle in its various forms will have reached such a state of development that it will in a large measure replace the horse-drawn cart, at least in congested centers of trade.

New uses for the automobile are constantly being hit upon. One of the cleverest that has recently come to my attention is the plan of using an automobile as a part of the equipment of a bank, to deliver moneys to customers and collect deposits from them. This is a good business policy, and in line with the developments of the age. It naturally follows that the bank which gives the best service to its patrons will get the largest amount of business. Why should not the banks go out in this way and bid for an increase in their line just as merchants and manufacturers do?

CONSERVATISM IN DESIGN A SAFE FACTOR.

By E. H. PARKHURST,

VICE-PRESIDENT PEERLESS MOTOR CAR COMPANY.

The automobile industry in this country is on a very satisfactory basis, and will undoubtedly remain so as long as the present conditions of commercial prosperity continue. The tendency is still toward the high-powered cars of large seating capacity, whereas abroad there seems to be an increasing demand for the lower-powered cars, particularly for the closed type. It is probable that in America it will be necessary to use cars of higher power than are used abroad because our road conditions require it. At the same time I believe that in the future there will be some readjustment of public sentiment, and that cars of smaller horsepower than we are now making will come into favor. It is a fact that we use cars mainly in the city, where excessive power and speed are a distinct disadvantage, as it involves longer cars, heavier cars and a higher cost of maintenance.

The public does not regard freak or experimental cars with favor, and has come to understand that conservatism is safer and that a good car is not the result of chance, but on the other hand is the product of good design, good material and good workmanship, and after that the elimination of weaknesses and bad features that are found out only through experience.

Although there is at present considerable interest shown in the six-cylinder type of car, it should not be supposed that this interest amounts to dissatisfaction with the present four-cylinder type. There is much that the public wishes to know with respect to six-cylinder cars, and much that must be proven by their makers before there will be any general demand for them, but I think that now they are regarded as somewhat of an experiment.

The great demand for the pleasure type of automobiles has prevented, and will prevent for some time to come, the development of the commercial car. The importance of the field for commercial vehicles is not being overlooked, however, and when the supply of cars more nearly equals the demand, or when the demand may fall off, there will certainly be a rush on the part of all makers to build commercial cars.

THE LAW OF SUPPLY AND DEMAND.

By GEORGE E. FARRINGTON,

TREASURER AMERICAN AUTOMOBILE ASSOCIATION.

Supply and demand is the never-changing basis of commerce and industry, regulating prices and quality as well as quantity. It has been interesting watching the effect of this law in the automobile industry. For pleasure machines it seems as if the supply had about reached the demand, and would soon pass it. This will mean still more attention to surpass in perfection of finish and construction of the motor, as the principle of operation seems to be nearly perfect, as are the passenger accommodations. Therefore we can assume that competition with the decreased cost of manufacture of parts, and that the user will be no longer called upon to pay heavily for experiments of the builder and cost of selling, will result in much lower prices for better material and, therefore, machines. The haste to manufacture to meet the demand is the principal reason that the domestic cars have failed so far to meet the finish, workmanship, and wearing qualities of the best imported cars, and again our labor and material are and have been much higher in cost than abroad. Competition will soon make it imperative for us to meet the standard of the best, which we can do.

The wise manufacturer of automobiles is to-day giving much time and attention to the commercial vehicle. This is a field without limit. Speed, durability, cost of maintenance, regularity in good or bad weather, excess of load, less space occupied, and the saving of the horse, who so often suffers through brutality, overwork, and overload, are unanswerable arguments.

A RATIONAL TENDENCY IS OBSERVABLE.

By F. L. SMITH,

VICE-PRESIDENT AND GENERAL MANAGER OLDS MOTOR WORKS.

The most healthful sign of the times for the automobile manufacturer, and for that matter to the distributer or agent, is the fact that the craziness of the whole game is rapidly passing away. The experienced buyer to-day does not attach the old importance to the magical word model, as applied to the machine made and delivered in one year as against the previous year's output from the same factory. A car that is good to start with in any given year needs only to be kept up to date in the little detail matters that make for the safety, comfort, and peace of mind of the owner and driver, and the limit is also being rapidly reached in the absurd and useless additions to simple mechanical parts, which ought to be enough to keep the average layman busy learning his machine and understanding that as long as he has to do with a power plant on the flowing road it is well not to let his mind run away with the dazzlements of extra fixings, double-jointed action, and forty-odd complications, to effect a very simple move which the driver-owner these days is qualified to master without much mental strain.

If you take the evolution of the single harness for a horse you will discover that straps, buckles, and all the working parts are made of the best material and as simple as it is possible to make them, and that they are cut down to the fewest number—not for the sake of economy, but for the sake of the man that has to hitch the horse and drive him. You might as well take pleasure in the invention of an automatic attachment to fasten around your waist, and by tripping a trigger in your right hand vest pocket automatically remove your hat and salute a passing acquaintances to save the mental labor of performing that courtesy by means of the thumb and forefinger acting in conjunction with your elbow joint and full arm.

The whole trade is getting extremely sensible these days, and it is not the novelties and the strange stunts that people lie awake nights to think of that appeal to the buyer—which is, in a word, to say that straightaway excellence in material and workmanship, backed by good records and good friends, is a final proof of a good automobile as it is of every other commodity commercially dealt in in these great United States. There appears to be room for everybody that makes a strictly first-class machine and sells it honestly. For the rest it is merely a question of the frequency with which angels are met to foster the existence of yellow dogs who have no real reason for being. All of which has come about by the sober second sense of the American buying public and not by any crafty effort on the part of manufacturers or selling agents. It is also to be noted that the strong trade papers, and the most progressive, have been extremely conservative and sensible in their views as to the development of the industry. Altogether the automobile manufacturer has much to be thankful for on the beginning of the year, not the least among which is the above-mentioned general prevalence of a rational outlook on the whole industry.

AUTOMOBILE'S PLACE FIRMLY ESTABLISHED.

By STANFORD L. HAYNES,

EX-PRESIDENT AUTOMOBILE CLUB OF SPRINGFIELD, MASS.

The automobile, it seems to me, has already firmly established its place in the world.

Its popularity as a means of pleasure is without a question.

As a means of utility, from my own experience, I know I should find it extremely difficult to accomplish the work I am called upon to do without it, and for a light delivery service with which I have had personal experience in my own business I know that one car will do the work of three horse-drawn vehicles—do it economically, and with better despatch. During our recent holiday rush of business one car has made as high as five hundred deliveries for us in one day, covering a distance of over seventy-five miles.

No physician to-day, having a practice requiring three or more horses, can afford to use them, as one good car, with a competent man to operate and care for it, will reduce his time in making calls at least one-quarter, and a busy doctor's time is certainly valuable. From my observation, however, he should not try to care for and operate his own car.

I am looking forward to the day when we can have special rights of way for the automobile between the larger cities so that a business or professional man can leave his own office at any hour that suits his convenience best and arrive at his destination in his own conveyance, entirely independent of the railroads and at no great loss of time, if any. If such rights of way were established I am confident they would pay for themselves even to-day, as the convenience offered would be highly appreciated by many a business man who would willingly pay any reasonable charge for the time saved and the convenience gained. I trust some move may be made in the near future toward the establishment of such rights of way that the automobile may more fully fulfill its mission.

THE TENDENCY TOWARD SIMPLICITY.

By CHARLES E. DURYEA,

PRESIDENT DURYEA POWER COMPANY, INCORPORATED.

I always thought I had a pretty big idea of the future of the auto business and my friends agreed with me on this point, but I confess that it is growing beyond my expectations. I am surprised and pained to see the growth toward cumbersome, complicated vehicles, although I know it is a matter of history that progress is made from the complex to the simple and that the large, clumsy, overgrown affairs ought to be expected first. I am sure that the future will develop simple, powerful, serviceable vehicles, more so than can be found at present, and that the use of these vehicles will extend to the masses just as did the bicycle.

More specifically, I saw signs of simplicity in the designs of vehicles exhibited at the last show. The combining of the trans-

mission gear with the differential gear box on the rear axle groups the mechanism in two places instead of three and gets a greater proportion of the weight on the rear axle—a move decidedly proper. The success of several vehicles having the motor at the extreme rear is a straw showing what will happen to others with like placing. There is more room for the motor at the rear than at the front, the weight is more effective, the power is transmitted with less loss and the passengers may be moved slightly forward, so as to be carried between the wheels with greater comfort. This seems to me the next design in automobiles. The motor went to the front to secure accessibility and cooling, but the cooling can be had at the rear, and the room at the rear for accessibility is greater. I believe the public are appreciating more and more light weights and large tires, and this combination is the solution of the tire trouble. Incidentally large wheels also serve to smooth rough roads, and rough roads, unfortunately, are the American kind.

COMING ALONG, BUT NOT IDEAL.

By W. S. GORTON,

SECRETARY AND GENERAL MANAGER STANDARD WELDING COMPANY.

At the present time the greatness of the "great" automobile industry is largely displayed in the columns of a great number of so-called automobile journals, most of which are simply reprints of old matter and photos of machines directly advertising some one product. Of the business, would say, that in the judgment of the writer it is improving materially and bids fair to assume very large proportions with the successful introduction of the commercial vehicle.

Great improvement has been made in the general mechanism of the car during the past year as to strength, reliability and convenience of operation and repair, but it is still far from the standard of excellence which must be arrived at before the motor car can become an altogether popular vehicle. When the ordinary automobile can be used with little fear that anything will go wrong except the rubber tires, it will have a great many more advocates than it has at the present time, as well as users.

If the work which is now being carried on toward the perfection of suitable highways for automobile use and other uses carries through, great credit must be given the automobile industry for bringing about a condition which is so much needed, especially in the central, western and southern portions of this country, where good roads in some sections are practically unknown for six months in the year. If the automobile can bring about the molding of public sentiment in this direction, all the time and means that have been expended upon this interesting and acceptable method of transportation will be well placed and prove of great advantage to the country at large.

SOUNDNESS AND STABILITY IN FUTURE.

By H. E. RAYMOND,

VICE-PRESIDENT THE B. F. GOODRICH COMPANY.

I can only voice, what is undoubtedly the universal consensus of opinion, that the future of the automobile industry is tremendous in possibilities. The present can be aptly criticised for its extravagance in detail and wholly impossible surrounding features of unbusinesslike methods of procedure. This is not due to lack of business management, but to the swift moving events that have carried the industry to a feverish point before mental activity could assimilate it. The future will see a readjustment of methods and consequent soundness and stability that will really mean much more to the trade at large than the present seeming prosperity, which involves the error of judgment now prevailing. There is nothing alarming in present conditions, which might, however, be termed the cocktail to the drawing of the more solid business lines to come.

MATERIAL MAKERS HAVE BEEN SWAMPED.

By E. D. FRETZ,

SECRETARY AND TREASURER LIGHT MFG. AND FOUNDRY COMPANY.

As every one well knows, the automobile industry is pushing forth in leaps and bounds, unprecedented in its growth, so that accessory manufacturers have not been in position to build additions to increase facilities rapidly enough to meet the urgent demands made upon them by automobile manufacturers for prompt service. While the automobile industry in all its details has grown very rapidly, it is our opinion that the industry is only in its infancy and that there will be little abatement within the next three to five years.

In our own line, as manufacturers of aluminum, manganese bronze and bearing metal castings, we have not been in position to measure up within fifty per cent. of the heavy demands made upon us for our product. The rapid growth has used up raw materials so fast that the producers are unable to supply the demand, and they, in turn, are spending millions of dollars to bring the supply of raw materials within the current demands of this great industry. Although we have large facilities for supplying castings, as far back as last September it became apparent to us that we could not take care of the many demands upon us and have been obliged to turn away many applicants with orders for our product, believing that it were better for us to give satisfactory service to a limited number than to attempt to supply an unlimited number. The future to us looks good, although competition is very keen. We are of the opinion that all honest manufacturers will have all they can do for at least from three to five years.

MAN FROM MISSOURI HAS BEEN "SHOWN."

By ROY F. BRITTON,

SECRETARY-TREASURER ST. LOUIS AUTOMOBILE CLUB.

I speak from the standpoint of a Missourian. This State seems to be in a peculiar situation. Missouri ranks fifth in population, seventh in wealth, and eleventh in the number of automobiles. Probably this is accounted for by the bad roads in certain sections of the State, but I think our unreasonable law has had more to do with it. For the past four years autoists in Missouri have been required to operate their cars under a law limiting the speed to nine miles per hour and requiring the payment of a $2 license fee in each county. This is practically prohibitive, and I think that under the circumstances the automobile progress that has been made in this State is remarkable.

From present indications it seems that the coming season will be the biggest one in the history of automobiling in the country. An extraordinary number of machines for 1907 delivery have been sold in St. Louis. We have every reason to believe that our Legislature has recovered from the attack of "autophobia" which it suffered in 1903, and will give us, at its next session in January, a fair and reasonable law that will tend to promote better conditions. As a matter of fact, I think we are really just beginning to get into the "game" out here, and I have great expectations for the future.

A YEAR OF GREAT PROSPERITY PREDICTED.

By VAL. DITTENHOFER, JR.,

PRESIDENT CINCINNATI AUTOMOBILE CLUB.

Automobiles have really only begun their great work, especially in our city, and from all indications there never will be so prosperous a year as the one we are now entering upon, for the majority of the people are talking new machines. Not only will they be used for pleasure, but also by business houses, all classes of which are now taking a great interest in the development of machines for commercial purposes. Taking it all in all, I think prospects of this great industry are more than encouraging for the present year.

THE AUTO AS A COMMERCIAL FACTOR.

By H. A. GRANT,

MANAGER ADVERTISING DEPARTMENT MAXWELL-BRISCOE MOTOR COMPANY.

The question is often asked, Will the automobile follow the bicycle? There are two excellent reasons why it will not. The first, the bicycle was never a factor in commercial life. It is true that it was used quite largely in transporting individuals from place to place, but it had no bearing on the commercial life of the large cities. The automobile delivery wagon and automobile truck are fast replacing the horse-drawn vehicle for fast service, and it will relieve more than any other one thing the present congested condition of our great cities. It will also enable the streets to be kept in a more sanitary condition.

In the pleasure vehicle line there is no reason or indication why they should not be as popular in years to come as they are at present. The automobile has brought back the old coaching days and has been the means of developing good inns throughout the country. It was only three or four years ago that a good hotel outside of our large cities and a few of the largest towns was a rare occurrence; now there are many fine inns that owe their existence almost entirely to automobile parties. England and France are still ahead of us on good roads and good country hotels, but it is gradually being changed, and as the automobile becomes more used by all classes, just so soon will we have good roads and good inns throughout the country.

GOOD ROADS THE INDUSTRY'S HOPE.

By S. D. WALDON,

SALES MANAGER PACKARD MOTOR CAR COMPANY.

The future of the motor car industry is dependent, to a great degree, upon highway improvement. Good roads propaganda and then quick, effective, extensive practical work in the making of roads are what count in firmly building up the motor car business. The Packard Motor Car Company has absolute faith in the permanency of the motor car business and is looking to the future for its profit. It also realizes that one of the best opportunities for creating a general faith in the permanence of motor cars as road vehicles lies in good roads work. The automobile industry must not expect profit now. The future is of too great consequence to allow it to be scorched with hot air methods intended to yield immediate return. Thus may the industry better itself most by never-ceasing endeavor focused upon the future; thus may the automobile industry do itself direct and lasting good by doing whatever and as much as it possibly can for better highways in this country. When the highways of America equal those of the popular touring countries of Europe, then may we readily expect America to be at the top of the heap in international motor car trade.

OUTLOOK IS VERY ENCOURAGING.

By J. P. COGHLIN,

PRESIDENT WORCESTER AUTOMOBILE CLUB.

From the manufacturer's standpoint it would seem that the sales for this year would exceed those of any other without a question. The manufacturer appears to be better prepared than ever before to meet this condition, as the 1907 models have been on the market for some months in a great many cases. The tendency seems to be toward larger horsepower, while the style and type seem to have been mixed.

With reference to roads, there is great interest created by the Long Island Parkway. We have indications that something may be done in that line in New England. There is no question but what automobiling has caused a lot of agitation for good roads, and that results are being accomplished. There is also some question as to whether automobiles impair State roads as much as horses. It would appear that it was the combination of the two that was destructive; that a road used exclusively for automobiles will not tear up nearly so fast as when a horse and narrow wheels go over it, which tends to cut the surface. We will have this measure before us undoubtedly to contend with in the Legislature this winter.

It is not the purpose of the Massachusetts State Automobile Association to propose any legislating this winter to any extent. The ground will be taken that the present law has not yet been fully tried out. However, it is proposed to watch for bills detrimental to automobile interests, and if any are introduced will oppose them.

A SURVIVAL OF THE FITTEST.

By M. L. GOSS,

SECRETARY BAKER MOTOR VEHICLE COMPANY.

The new year opens most auspiciously, the sun light of prosperity illumines the outlook, the public interest in automobiles is intensified beyond any previous experience. There is promise of a quick market for quality and possibly good business for bad and some sales for the indifferent, but still I believe that 1907 is to prove a crucial period of the business. It is the beginning of the elimination, the primitive days have passed. The crude first machines (and they all look alike to the public) were more fascinating than the telegraph, telephone, phonograph, electric light, camera and all other of the new inventions of the nineteenth century. These old machines have gone, we hardly know where. The people have grown more wise, more mechanical, more discriminating, and now differentiate between automobiles of reputation and distinctive characteristics of quality from cheap made cars of questionable worth, to say nothing of those that are absolutely bad. Fancy catalogs and extravagant advertising, attractive as they may be, are no longer convincing. The speed clown has ceased to be a stellar attraction in the great automobile circus. We are all getting back to earth, settling down to the legitimate, and, like all lines that have gone before our time, it is the survival of the fittest.

PREDICTS HORSES WILL BE RARITY IN 1915.

By ASA PAINE,

PRESIDENT FLORIDA EAST COAST AUTOMOBILE ASSOCIATION.

American brains and machinery are successfully producing many very superior automobiles which are suitably adapted to the road conditions of this country. Foreign makes of automobiles are being driven from our markets by equally as good machines at much less cost, made by many very reliable concerns. We now have a surprising array of reasonably priced cars, most of them substantial and well worth the prices asked. I want the pleasure and satisfaction of seeing my prediction come true—that by 1915 horse-drawn vehicles of all kinds will be a decided rarity, at least on the congested thoroughfares of large cities. Racing under proper conditions is of great importance in the complete development of a strong, safe, and good motor car, and should be encouraged by manufacturers. I believe the good roads problem is being rapidly solved and that an automobile of some kind will soon be a universal necessity in every well-regulated family.

FORECASTS AND CALCULATIONS INADEQUATE.

By PETER L. STEENSTRUP,

SECRETARY AND SALES MANAGER HYATT ROLLER BEARING COMPANY.

Words are really lacking in the staid old English language to express the stupendous, marvelous and gigantic development of this young but overgrown industry. The effect that the automobile has had on our business is reflected in the majority of other cases and tells the story possibly plainer than any thing else. As manufacturers of an anti-friction bearing for a large variety of purposes, the use of this bearing for auto-

mobiles was four or five years ago a mere incident in our general business. During the past years we have found ourselves constantly short of facilities, although each year we have erected such additional buildings as seemed more than ample to even the most sanguine expectations, so far as the increase of business is concerned. We have, in common with hundreds of other manufacturers, found ourselves in the unique position of being unable to sufficiently provide for the increase of such business as is practically forced upon us because of our inability to obtain in the market delivery of machine tools in less than from eight to fourteen months—machine tools which a few years ago could have been picked up in stock in any big city.

The growth of the automobile industry, which two years ago was predicted as approaching its zenith, throws all forecasts and calculations to the winds. The industry to-day is scoring a "beat" on all other industrial developments within the memory of man, and the ultimate outcome is completely hidden in a seemingly endless and accelerating demand for cars.

NOTHING BUT A PANIC CAN STAY PROGRESS.

By EZRA E. KIRK,

GENERAL SALES MANAGER E. R. THOMAS MOTOR COMPANY.

I regard the automobile business as the most wonderful development of an industry that this or any other country has ever witnessed. I have given more or less thought to the business, and have tried to look at it from various points of view. I have not the reputation of a pessimist, and certainly try not to be an extreme optimist. Looking at the situation from various points does not disclose a cloud on the horizon. The decided improvement in the quality of the production argues for the continued prosperity of the business as a whole. In my opinion, the only condition that could bring about a change in the present conditions that surround the automobile business would be a decided panic, and even this condition would not prove as serious as it would have in years gone by. The greatest danger to the industry is that of over-production. I believe, however, that the manufacturers have discounted this danger, and are proceeding along cautious and consistent lines.

As my efforts have been confined entirely to the building and merchandising of pleasure vehicles, I do not regard myself competent to even venture an opinion on the commercial wagon. From the point of view of an outsider, however, I should say that the successful commercial wagon was in sight; in fact, had arrived, and that very little further development is required to warrant its production in quantities. I believe that the volume of production of commercial wagons would so far exceed that of pleasure vehicles that comparisons will hardly be possible.

UNCERTAIN STAGE OF INDUSTRY HAS PASSED.

By GEORGE M. DICKINSON,

NATIONAL MOTOR VEHICLE COMPANY.

We have never, in our automobile experience, felt as much encouraged over the prospects as we do at the present time. We have found a great demand for our product in all portions of the United States, and we understand that all makers of good cars are as busy as ourselves, and from all we have been able to learn these conditions will prevail for some time to come. The automobile business has passed that uncertain stage when the purchaser of a car felt he was buying a "pig in a bag," as it were, but he purchases a machine now from a reputable maker with perfect confidence, and we are quite sure there are a great many buying automobiles who in the past have felt that the business had not reached the proper stage of development to make it worth their while to purchase a machine. We look forward to a heavy demand for a car, such as we are making for some years to come, and are laying our plans accordingly.

MUCH GREATER THE FUTURE THAT AWAITS.

By ALEXANDER WINTON,

PRESIDENT WINTON MOTOR CARRIAGE COMPANY.

Great as the automobile industry now is, its future will be far greater. The manufacture and use of pleasure cars, which have demonstrated the practicability of the self-propelled road vehicle, is simply a primary step toward the manufacture of cars destined to do the world's trucking. Thus far American manufacturers have been so extremely busy manufacturing pleasure cars that the wider and richer field of commercial wagons remains to-day practically uninvaded. This condition is certain to be changed. The change may not come rapidly, and preferably it should not come with a rush, for the commercial vehicle proposition, presenting somewhat different aspects from the pleasure car proposition, is one to be handled with deliberation.

The demand now exists for power wagons capable of doing greater work at less expense than is possible with horse-drawn vehicles. In recognition of this demand our manufacturers are devoting themselves quietly, but none the less seriously, to the production of vehicles which shall be wholly successful from the instant of their introduction. It would be a vital error to market power wagons with undue haste, since the use of unsatisfactory wagons would prove an unwelcome advertisement and seriously retard progress. Established manufacturers appreciate this possibility and need no warning. The danger, to my mind, is threatened by the possible invasion of the power wagon industry by latent capital bent upon the quick production of big dividends.

MAKERS ARE TO BLAME FOR DELAYS.

By H. S. WHITE,

ASSISTANT GENERAL SALES MANAGER SHELBY STEEL TUBE COMPANY.

At the present time every automobile manufacturer of importance has all the work that he can take care of, and with continued prosperity throughout the country this condition should continue throughout the year of 1907. We realize that one serious handicap to the automobile manufacturer this season is the inability to secure as promptly as they may desire material which enters into the construction of their vehicles. This, however, is largely the fault of the manufacturers themselves, as it has been the custom in the past to defer placing orders for material until such a time as their engineering department had completed all of their experiments and plans.

For the good of the trade, it would be wise on the part of the manufacturer to complete his experiments far enough in advance so that there should be no difficulty whatever in placing specifications four to six months in advance of their actual requirements.

For our own particular product there has been an exceptional demand from all parts manufacturers and the completed vehicle manufacturers, and we feel convinced that the year of 1907 will be a very prosperous one for all connected with the industry.

USELESS WEIGHT MUST BE DISPENSED WITH.

By H. H. FRANKLIN,

PRESIDENT H. H. FRANKLIN MANUFACTURING COMPANY.

Up to date the automobile has not been the money maker expected. Only the leading makers and dealers have been able to show satisfactory profit. The buyer of the automobile has also been a loser. He has had to buy the experimental product and with the maker has shared the enormous cost of development. But here is the funny part of it—both buyer and maker have thought that with the appearance of a car that was reliable and so built as to stand several years' use, the expensive development and changing business would be at an end and both would settle down, the one to enjoy, the other to make, much profit. Not so! Along with the present reliability and lasting qualities is an element—a big trouble—that must be

overcome. It is useless weight. The buyer now knows that his heavy car must be replaced by a light one and the maker is already groaning because of the pending burden of new design and new methods of construction. So acute is buying sentiment that the heavy car maker recognizing it no longer gives weights, and is sore pressed if asked to do so.

A FUTURE THAT IS MOST PROMISING.

By W. C. MARMON,
PRESIDENT NORDYKE & MARMON COMPANY.

The future of this great business is most promising. The demand for pleasure vehicles will no doubt increase for some time to come, and in our opinion there will always be a large demand for practical vehicles. While great improvements in construction are going on there is a noticeable change for the better taking place in business methods, and there is a gradual working out of the whole proposition towards a sane and substantial business basis which is most encouraging.

The commercial vehicle proposition, which has come to the front rapidly, will soon be another strong factor in making the business a flourishing industry for many years to come. We do not pretend to supply the demand for our cars and we presume that nearly all other manufacturers are in the same boat. There is bound to be an end to this condition, however, though there is probably room for more manufacturers just now. Latter on a weeding out may be expected and the proposition will resolve itself into one of the "survival of the fittest."

IT IS SERVICE, NOT FASHION, THAT COUNTS.

By THOMAS HENDERSON,
VICE-PRESIDENT WINTON MOTOR CARRIAGE COMPANY.

In careless speech the popularity of the automobile is sometimes referred to as a "fad." To that expression I object. A fad is defined as a passing fancy or a capricious hobby, and neither phrase is accurate insofar as the motor car is concerned. To be sure, Mrs. Jones may insist upon her husband buying an automobile because the Greens next door have one, but I know from experience that the Jones family will continue the use of their car even should the Greens cease to be factors in the neighborhood social life. And that is because the motor car performs a service which its owner finds he cannot get along without. Indeed, once he realizes how much more largely the motor car contributes to his enjoyment of life, he lastingly regrets his delay in purchasing. And it is wholly upon this single item of service that the whole future of the motor car rests secure.

DENVER AS AN AUTOMOBILE CENTER.

DENVER, COL., Jan. 14.—It is doubtful if another city in the country of equal size can equal Denver's record for 1906 automobile buying. There are seventeen agents in the city, who together represent forty-five different makes of motor cars, and the agents sold to Denver people a total of 560 cars of an aggregate value of $1,065,500, or an average value approximately of $1,900 each. In addition to selling to Denverites 560 cars, the local agents sold 175 to customers residing in various parts of the State. These cars had a value of $332,450, or an average value of $1,900. Thirteen more cars valued at $47,600 were purchased by persons living in States west and north of Colorado.

The grand total of the automobile business in the matter of 1906 models and from the few 1907 models shows that 7.8 cars, valued at $1,445,500, were sold in Denver last year; add to this approximately $100,000 paid for second-hand cars and the revenue in this one particular industry goes beyond the million and a half mark.

Denver did not buy cheaply, the greater number sold being touring cars. Local pride says this indicates that Denver wants only the best.

BOOKS ON AUTOMOBILING.

Winged Wheels in France.

In a handsomely illustrated volume just published by G. P. Putnam's Sons, Michael Myers Shoemaker, tells of his run through the sunny land of France. The winged wheels were those of a 24-horsepower automobile, which confined itself to the modest speed of forty-five miles an hour, leaving faster progress to the 90-horsepower machines, which rushed past as though the author's car was standing still. Here are glimpses of stately old chateaus, some in ruins, some still inhabited, and made rich by tapestries which have hung there for centuries; information about roads and hotels; tempting bills of fare; sage warnings of discomforts to be shunned; types of national character; sketches of persons and events associated with the scenes described. The old walled town of Carcassonne was one of the traveler's few disappointments.

The descriptions are graphic, and there is a wise avoidance of the geographical details which often incumber books of travel, giving them the tone and aspect of guide books. The long tour was unmarred by any serious mishaps, although the number of French dogs was somewhat decreased. The book is illustrated by about sixty reproductions of photographs, and has a good index.

From the Rubber Tree to the Automobile.

"Rubber Tires and All About Them" is the title of a volume by Henry C. Pearson, editor of the *India Rubber World*, which deals with the rubber tire of every kind, and from every possible point of view. Beginning with the crude rubber in the South American forest, the material is followed through the various stages of manufacture until it emerges a complete tire. The theory, as well as the history of the pneumatic tire are gone into at length and present-day methods of construction are described. The book is profusely illustrated throughout, and as Mr. Pearson is an authority on the subject his work should be of value to those seeking tire information.

ITALY'S AUTO EXPOSITION AT TURIN.

U. S. Consul A. H. Michelson advises that the Automobile Club of Turin will inaugurate its fourth annual international automobile exposition in the newly enlarged Palazzo delle Belle Arti of the Valentino on February 16, 1907. Turin is Italy's greatest automobile center.

The exposition is under the patronage of the King of Italy, and will this year assume proportions not heretofore attained. Turin is the most important automobile center of Italy, and probably of Europe. It contains 21 of the 51 Italian companies engaged in the construction of automobiles, 6 of the 19 Italian automobile coach-builders, and 7 of the 30 Italian makers of automobile accessories; a total of 34 out of the 100 Italian companies that manufacture automobiles and their accessories. In the exposition of last year there were 102 exhibitors, only two of which showed American cars. Thirty thousand paying visitors saw the exposition.

It is most important that a good number of American makers be represented in an exposition held in such a center of the automobile trade as Turin. While for high-power touring cars American makers will find the competition of European firms exceedingly difficult to meet, this should not prove the case with cars lower in horsepower and price. The exhibiting of lightweight runabouts should prove especially worth while. So far the Italian makers have failed signally to realize the possibilities of good cars of this description on the Italian market. It can safely be said that American initiative which places runabouts and other lightweight cars upon the Italian market at a price not over $1,000 will be attended with success. Cars of this description should have as long a wheelbase as possible, should be fitted, not with one, but with two or more cylinders, and should be driven by magnetic ignition.

LETTERS INTERESTING AND INSTRUCTIVE

MORE ABOUT TWO-CYCLE PISTON INLET VALVES.

Editor THE AUTOMOBILE:

[534.]—Having made innumerable experiments with the inlet valve in the piston—in fact, I have devoted nearly all my time to this type of motor—I wish to call your attention to an error in Mr. Malcolm's idea as published in your issue of the 27th. The position of the valve is exactly the reverse of what it should be, and it would be impossible to operate a motor with a valve in this position, as the first explosion would dislocate it, to say nothing of what the heat would do to the spring. I presume Mr. Malcolm got this idea from a description of one of my engines, sent by me under the name of Carter to C. E. Duryea, of the "Cycle and Automobile Trade Journal," for criticism about a year ago.

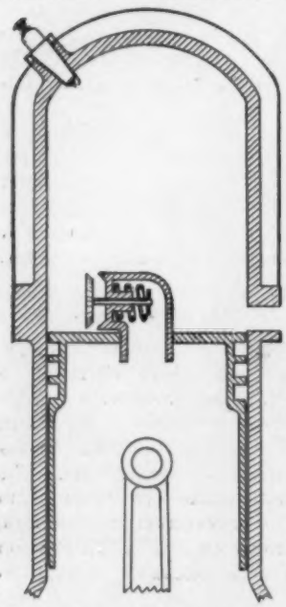


FIG. 1.—Sectional view of two-cycle engine with horizontal valve in piston suggested by C. E. Duryea about a year ago.

Mr. Duryea in his criticism suggested placing the valve in a horizontal position above the piston (see Fig. 1), just the reverse of Mr. Malcolm's idea. In conclusion of his article on the piston valve, Mr. Malcolm states that, while this was an excellent construction, his objection to this principle was the necessity of using the check valve. Here I again disagree with him, as a valve made of good material of the proper shape and size will give practically no trouble on the admission port of any gas engine. It is my belief, that as long as the two or three-port principle is carried out, the two-cycle engine will never go above the present standard of engine built on this principle. I think the ideal two-cycle engine will accomplish the transfer of the incoming gas through valves, either mechanical or automatic. I do not think that a two-cycle engine operating with valves will be condemned any more than a four-cycle.

In my first engine I used the crankcase compression, but soon found this unsatisfactory in many ways, and turned my attention to other means of compression. Two methods appeared the most practical, namely, the separate compression cylinder and the double-ended power cylinder using the stuffing box end for compression. I chose the latter construction as it would, in my mind, make the most simple engine. This construction, of course, requires the use of a crosshead, but I think this preferable to the separate compressing cylinder, as it is much more compact, and will give a better balanced engine, a very important feature. The stuffing-box on this engine works under a light pressure, and is always cool and easily lubricated, and will run for months without attention or leaking. The crosshead can be made very light with ample wearing surface. Those used in my engine are made of steel, honeycombed and case-hardened. The adjustments for wear are made on the slides instead of on the crosshead, and as the strain is on one side of crosshead on the down stroke and on the opposite side on the up stroke, the wear is very even. I next turned my attention to producing a variable compression motor, as I found a high compression undesirable for slow speeds, while it gave the best results for high speeds, and vice versa.

Now the ideal condition is to have just enough compression to transfer the given amount of gas at each stroke at any speed, and this certainly cannot be accomplished with a fixed compression. To get this result I built my engine on the principle shown in Fig. 2. The piston A is closed at its lower end; an automatic poppet valve located at B opens into the hollow piston; the automatic valve at C opens into the combustion chamber K and F; the gas is admitted to the lower end of cylinder through the rotary valve D on the up stroke of piston; an automatic poppet valve operates very satisfactorily in place of the rotary valve and requires no gearing.

On the down stroke of the piston the gas is transferred through valve B into the piston chamber, the explosion of the previous charge holding valve C on its seat. Now it will be clearly seen that on each up stroke of the piston a charge of gas equal to the piston displacement minus that of the rod, which is slight, will be taken into the lower end of cylinder. On the down stroke this entire charge of gas will enter the piston because the said piston comes within 1-16 to 1-32 of an inch of the lower end of cylinder. This charge, of course, having no effect whatever on the next, as the valve B closes the instant the piston starts on the up stroke, confining this gas in the piston. Consequently, on each down stroke a charge of gas, practically equal to the piston displacement, will be delivered to the piston regardless of the speed at which the engine is running when throttle is wide open. When the engine is running the action is as follows: As soon as the piston approaches the lower center, the ports EE are uncovered and the burned gases escape through these, as in an ordinary engine. As soon as the pressure in the cylinder falls below that in the piston the valve C is thrown open by the compressed gas in piston, which rushes into the cylinder, first clearing chamber K of burned gases, then rising in a column at the center of the cylinder.

The normal compression, or the compression on one down stroke of the piston, is about six pounds when throttle is wide open. This compression is sufficient to transfer the full charge at low speeds only. As soon as the engine is speeded up so fast that six pounds is not sufficient to transfer the full charge to the cylinder, the part not transferred will be left in the piston under a slight pressure, this pressure, as before stated, having no effect on the next charge.

Now, for convenience, we will suppose the amount of gas or pressure left in the piston to be one pound. On the next down stroke of the piston the normal amount of gas or pressure, six pounds, is forced into the piston in addition to the one pound left from the previous charge, making the compression seven pounds, instead of six. If this is still too low to transfer the full charge, a part of this charge (we will say one pound) in addition to the previous one pound, will be left in the piston, raising the compression to eight pounds on the next down stroke of the piston. This action will continue until a sufficiently high compression is reached to transfer a charge to the combustion chamber equal to that taken in at the lower end of cylinder when the engine is being brought from a low to high speed. When slowing up, a slight overcharge will be admitted at each stroke until the engine reaches a fixed speed.

It will be noticed that the shape of the piston makes the ideal deflector, keeping the incoming gas in a column at the center of the cylinder when running on a full charge. When throttled down low, all the fresh gas remains in the piston chamber K. With the spark plug at center of cylinder head, the spark always occurs in a body of fresh gas, allowing this engine to be throttled exceptionally slow without missing.

By passing the gas through the lower end of cylinder and also through the piston it is brought to a much higher temperature than usual before entering the cylinder, thereby producing a thoroughly vaporized mixture, and at the same time keeping the piston and lower part of cylinder fairly cool. The exhaust ports extend entirely around the cylinder, and with this practice it is possible to make them much narrower, and at the same time get a greater area than with the ordinary practice. The narrow ports, of course, add to the power stroke. Again, by having the ports entirely around the cylinder, the expansion of same is very even, having no tendency toward distortion, as in a two or three-port engine, where the exhaust highly heats one side, while the other side is kept fairly cool by the incoming gas.

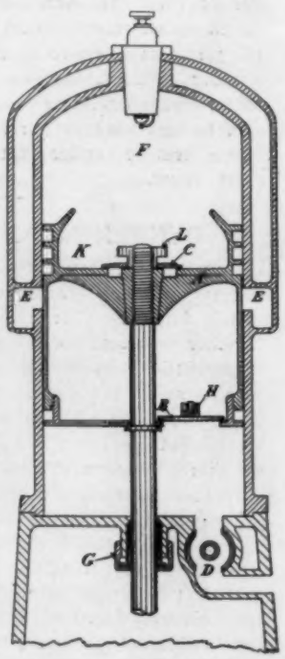


FIG. 2.—Sectional view of P. R. Wottring's two-cycle variable compression engine. This sketch is not drawn to scale.

In my engine I use a crosshead and connecting rod similar to one used in a steam engine. By using a crosshead to take the side thrust, it is possible to use a much shorter connecting rod than usual without any bad results. The unusually short connecting rod also gives a considerably longer time than usual between the opening and closing of the exhaust ports. An excellent feature of this engine is that the

charge is taken into the cylinder during the full up-stroke of the piston, allowing the use of any carbureter, this action being far superior to the short, quick rush of the three-port engine. The construction of this engine also admits of a perfect system of lubrication, which is by no means a small matter.

The crank bearings and pins, the slides and crosshead pin can all be liberally flooded with oil by the splash system without danger of flooding the cylinder. This oil also stays in a good condition, as it is not carbonized or burned in the cylinder. The cylinder can then be fed independently just the proper amount of oil to give the best results from a force or sight feed oiler.

Mr. Malcolm criticises the use of poppet or check valves in this motor. I would like to know if he considers the four-cycle engine a failure with its two and quite often three valves. Now, if a two-cycle engine will deliver two impulses to one of the four-cycle, and each one of them as good, or practically so, as the one, what would be the objection to the same number of valves in the two-cycle as in the four? In my engine only one valve is mechanically operated, and that is a rotary valve of the simplest form running at half the crankshaft speed. This valve works under a light pressure only, and at all times is cool, permitting of thorough lubrication, doing away with any danger of undue wear.

The valve B is simply a flat disk with a small, short stem, this valve being held in place by a light bridge H. It requires no spring, as the motion of the piston opens and closes it at exactly the right time. Valve C is a flat disk held in place by the nut L on an extension of the piston rod. The pressure of the gas in the piston opens this valve and the motion of the piston closes it. The fact that this engine will receive a slightly less charge of gas than the piston displacement, will cause some criticism, but the almost innumerable other good points more than make up for this one, by no means bad, feature.

The best three-port engine in the country will take in but very little over a charge of gas equal to one-half the piston displacement at high speed, while some take in less than this amount at slow speed, while at no time will any two or three-port engine take a charge of gas at every stroke, equal to the piston displacement. L. R. WOTTRING.

Prospect, Ohio.

[EDITOR'S NOTE.—The error referred to by Mr. Wottring in the opening paragraph of his letter was one for which the draughtsman was entirely responsible, misplacing the valve in question in preparing the rough outline sketch, which was merely intended to illustrate the principle referred to in the accompanying text. We cannot say where Mr. Malcolm obtained his idea on the subject, but in presenting it he did so merely by way of review of proposed types of two-cycle engines, together with his views on their merits, and not by any means as an original conception of his own.]

POWER IN AIR- AND WATER-COOLED MOTORS.

Editor THE AUTOMOBILE:

[535.]—As a regular reader of your valued magazine, I write to ask if you will kindly give authoritative opinion and reasons therefor on the following statement: "A" affirms that with two motors of equal dimensions in every detail, same compression, etc., the motor with air-cooling system will develop more horsepower than the one water-cooled; for instance, the air-cooled motor will develop 30 horsepower, where the water-cooled motor can only develop 20 or 25 horsepower. "B" says such is not the case; that is, it is not yet practical. S. BARRETT.

Carteret, N. J.

Theoretically speaking, of two motors alike in every detail of design and operation, the air-cooled motor should develop a greater amount of power than the water-cooled, but that the difference between the two would ever be so great as you mention is extremely doubtful. The reason for this is due to the fact that the efficiency of an internal combustion motor is measured by the number of calories or heat units in a given quantity of fuel that it converts into useful work. Generally speaking, water-cooling is over-efficient; it tends to keep the cylinder walls at a temperature below that at which the highest percentage of thermal efficiency is reached by the motor when in operation. There is naturally a limit to the temperature at which a motor can be run constantly under ordinary conditions, as the lubricant will vaporize or burn and the piston bind. The majority of makers prefer not to approach this danger line too closely; hence, the great heat losses in the water jacket. Air-cooling, on the other hand, may also be over-efficient, though this is not as likely to be the case as with a water-cooled motor, and in consequence a greater percentage of the heat is apt to be utilized. But in the contention which your letter reveals, B is correct in stating that the construction of an air-cooled motor of the same compression and same mechanical details as a water-cooled motor of the same size has not been found practical. With the exception of motors of very small size, such as employed on the motor bicycle, it is not usual to design air-cooled motors with anything like the same degree of compression as is used in water-cooled motors of the same dimensions, owing to the extremely rapid rise of temperature with the compression. At first sight there appears to be no reason why this should not be done, but practice has shown otherwise. It is but one of the many instances in which theory and practice do not agree.

MORE ABOUT CRANKCASE BREATHERS.

Editor THE AUTOMOBILE:

[536.]—Permit me to correct a statement made by you in reply to letter from Wm. F. Long, in "The Automobile" of December 13, on the subject, "Use of Breathers on Crankcases." While expansion of air in crankcase, due to heat generated in running, as well as leaks of gas past the piston during compression and explosion periods are a proper raison d'etre for breathers, your statement explaining other causes for unstable equilibrium are incorrect, as you will at once note. You state in answer to Mr. Long that "it is not a fact that downwardly moving pistons in a multi-cylinder engine exactly compensate for the upwardly moving ones—because the angularity of the connecting rod causes the pistons in upper half of stroke to move materially faster than in traversing the lower half." It is in this statement that you are wrong, which can be shown by more than one line of reasoning, as I will proceed to show.

1. Angular velocity of crank on the crank circle is same at all parts of a revolution for any given constant speed.

2. Piston travel (one way full stroke) is equal to diameter of crank circle.

3. Distance traveled (in one way full stroke) by piston is therefore equal to an angular motion of crank of 180 degrees, which is to express point 2 in other language.

4. The projection of that angle (180 degrees) upon the diameter. (Vertical diameter on a vertical engine and horisontal diameter on a horizontal engine.)

5. For any portion of the travel of crank and piston, therefore, the lineal measure of piston travel equals the projection of the crank circle arc of angular travel of crank upon the diameter of crank circle which coincides with center line of cylinder.

6. Projections at the top and bottom of stroke are therefore a minimum, and at middle of stroke are a maximum for any given angle of travel of crank on crank circle. This will be seen at a glance by projecting upon the vertical diameter (as explained above) the arc of angular travel of crankpin for the first and second—45 degrees of motion. This projection of first 45 degrees is less than one-half of the similar projection of the second 45 degrees. It would be easy to go into figures and prove this by trigonometry or to plat it and show it graphically, but it is hardly worth while.

For a more popular explanation it will be noticed that as piston changes its direction at end of each half stroke or cycle it must come to a stop and its velocity is therefore zero, whereas in middle of stroke its velocity is maximum. It is this very fact among others that makes all oscillating engines of steam and gas engine type of necessity slower speed motors than turbine and electric motors of rotary type. You were right in your idea that piston had a variable velocity, but wrong in your explanations and conclusions, for, as shown, the variation here is symmetrical and for all engines of even numbers of cylinders set 180 degrees apart the equilibrium is maintained, provided, of course, no two adjacent cylinders not 180 degrees apart are confined in a crankcase section, not connected so as to admit of free circulation or oscillation of the air confined.

This is all I sought to explain to readers of your extremely interesting and valuable paper. Still, we have to have the breathers for other reasons given by you. J. FRANCIS BOOREAM.

Greenwich, Conn.

OHIO CITY WANTS FIRE APPARATUS.

Editor THE AUTOMOBILE:

[537.]—We are in the market for an automobile piece of fire apparatus, namely, a combination chemical engine and a hose wagon, machine to be arranged to carry one chemical tank, capacity 35 gallons, and 1,000 feet of fire hose. We would be pleased to hear from automobile builders as to what they have to offer.

Alliance, O. WM. AUNGST, Chief, Fire Department.

FRANCE LEADS THE WORLD IN PROLONGED SPEED

IN the three great long-distance road races of last year France captured all first place honors, but each time with a different driver. Szisz, with a Renault, won the Grand Prix; Duray, a Dietrich driver, succeeded in the Ardennes Circuit; and Wagner and his Darracq appropriated the Vanderbilt Cup. A feature of the 1906 racing was the use of dismountable rims, by which a saving of fifteen minutes was effected in changing tires. Owing to their widely differing lengths and road conditions, it is not possible to put the three international speed tests on a common basis. The Ardennes and Grand Prix circuits were about equally speedy, but the length of the former was only half that of the latter, and it is therefore not surprising that the highest average was obtained in Belgium. Compared with the two European courses the Long Island circuit left much to be desired for speed, yet its average is only slightly lower, as will be seen from the following table:

Ardennes Circuit: Duray; Dietrich; 372 miles, average 66 m.p.h.
Grand Prix: Szisz; Renault; 769 miles, average 63 m.p.h.
Vanderbilt Cup: Wagner; Darracq; 297 miles, average 61¼ m.p.h.

The fastest rounds in each of the three contests were:

Grand Prix: Baras, Brasier, 74 miles per hour.
Ardennes Circuit: Wagner, Darracq, 70 miles per hour.
Vanderbilt: Tracy, Locomobile, 67.66 miles per hour.

Of world-famed drivers four competed in the three great road races, namely: Duray, Clement, Wagner and Jenatzy. Lancia did not run in the Ardennes, and Szisz confined himself to the Grand Prix. Duray heads the list, comparing with his companions, as follows:

Duray—8, Grand Prix; 3, Vanderbilt; 1, Ardennes.
A. Clément—3, Grand Prix; 4, Vanderbilt; 6, Ardennes.
Jenatzy—10, Grand Prix; 5, Vanderbilt; 10, Ardennes.
Wagner—0, Grand Prix; 1, Vanderbilt; 8, Ardennes.
Lancia—5, Grand Prix; 2, Vanderbilt.
Szisz—1, Grand Prix.

Burton replaced Jenatzy in the latter half of Grand Prix; Wagner completed only two rounds.

The fastest short burst of speed in 1906—or in any year, for 1906 saw the breaking of all records—was given by an American-built machine, the Stanley steamer, driven by Fred Marriott. On the Ormond-Daytona beach he covered the mile on a flying start in :28 1-5, or at the terrific rate of 127.66 miles an hour. Although America occupies top position, France has a no less glorious record, and indeed over a two-mile stretch, with a flying start, left the American "Teakettle" behind, Demogeot with eight-cylinder 200-horsepower Darracq clocking at :58 4-5, equal to 122.44 miles an hour, against his rival's :59 3-5, or 120.8 miles an hour. All the world's short-distance records, except the flying kilometer and flying mile, are held by the eight-cylinder Darracq monster, which, piloted by Hemery for the first time on the measured kilometer in the south of France at the end of 1905, then by Demogeot at the Florida meet, and latterly by the young English sportsman, A. Lee Guinness, has been everywhere victorious.

Distance.	Time.	Start.	Car.	Driver.	Place.	Rate of Speed.
1 mile	28 1-5 s.	Flying	Stanley steamer	Marriott	Florida	127.66
2 miles	58 4-5 s.	Flying	Darracq, 200-h.p.	Demogeot	Florida	122.44
2 miles	59 3-5 s.	Flying	Stanley steamer	Marriott	Florida	120.8
1 kil.	18 2-5 s.	Flying	Stanley steamer	Marriott	Florida	121.57
1 kil.	19 s.	Flying	Darracq, 200-h.p.	Guinness	Ostend	117.6
1 kil.	26 2-5 s.	Flying	Darracq, 80-h.p. light racer	Walker	Ostend	84.6
1 mile	45 2-5 s.	Standing	Darracq, 200-h.p.	Guinness	Ostend	79.2
100 miles	1:15:40 2-5		Napier	Earp	Florida	79.2
1 kil.	29 s.	Flying	Darracq, light	Demogeot	Gaillon Hill	77.0
100 kil.	52:49		Darracq	Wagner	Ardennes Cir.	68.6
1 kil.	33 2-5 s.	Standing	Darracq, 200-h.p.	Guinness	Scheveningen	66.9
1 kil.	40 1-5 s.	Standing	Darracq, light	Walker	Scheveningen	55.6

GRAND PRIX RACE NOW CERTAIN.

PARIS, Jan. 10.—The fears of the Sporting Committee of the A. C. F. and of all French constructors interested in racing, have been allayed by the official announcement by M. Clemenceau, that permission for the holding of a long-distance road race will not be refused. Owing to semi-official reports that the government intended to put a ban on road racing, a deputation recently waited upon the Premier and asked for an official declaration. A circuit will now be selected, permission obtained from all the interested local authorities for the monopolizing of the roads, and a further request for authorization made to the head of the government—all a matter of formality. Proposed circuits are numerous, every district having a good set of roads doing its best to obtain the favor of the A. C. F. Fontainebleau circuit, near Paris, is the only one that has been officially examined, and is now found unsuitable. Auvergne and the Ardennes, both good racing grounds, are putting forth claims, but the financiers favor a course nearer Paris.

The first three entries for the Grand Prix have been made by the Bayard-Clément firm, the machines to be driven by Albert Clément, Pierre Garcet and Villemain. Three six-cylinder racers were built during the fall, two of them being now tried out on the road. It is very probable that these will be the machines selected for the Grand Prix. The Brasier firm, whose participation in road races next year was somewhat doubtful, has just announced that it will compete in all the principal events of 1907.

RECORD ENTRY FOR EMPEROR'S CUP.

PARIS, Jan. 8.—Seventy-four engagements have been received for the German Emperor's Cup, to be run on the Taunus circuit next June. This is the largest number of cars ever entered in a long-distance road race since the ill-starred Paris-Madrid test. Entrance fees for cars alone reach a grand total of $55,500, and this will be further increased by the rental of tire and gasoline stations on the course. Of the seventy-four machines, 32 are German, 18 French, 12 Italian, 3 English, and the remainder Swiss and Belgian. Well-known drivers who will figure in the race include Lancia, Nazzaro and Weillschot for Fiat; Wagner, Hanriot and Demogeot for Darracq; Jenatzy for Mercedes, and Duray, Rougier and Gabriel for De Dietrich.

A certain number of important French constructors, amongst them Renault, Panhard, Braiser, Hotchkiss and Bayard-Clément, have withheld from the race on the ground that the regulation limiting cylinder volume was not such as would improve the construction of automobiles. The race will be run on a 52-mile course, thus it is certain that the first car will be round to the starting line while machines are waiting to start.

DEMOGEOT ENTERS THE MARRIED RANKS.

PARIS, Jan. 8.—Victor Demogeot, the Florida speed king, has just "buried his bachelor days"—as the French put it. The ceremony took place in the frontier town of Nancy, the bride being Mlle. Marie Cardot, a charming young lady of that city.

THE PATHFINDING "ALLIGATOR" ATTRACTED ATTENTION ALONG THE ROUTE, THIS PICTURE IN WINNSBORO, S. C., BEING TYPICAL.

FROM THE BIG TOWN TO ORMOND'S SANDS

WHEN Ralph Owen left Columbus Circle, New York, Sunday, Dec. 23, he predicted that he would pilot the Oldsmobile to the Ormond-Daytona beach in twenty days. As events turn out, he has had not only made good his prediction, but with the liberal margin of two days to spare. The Oldsmobile "Alligator," after making the run from St. Augustine to Ormond in the record-breaking time of four hours, despite the difficulties encountered, and after having duly accepted the hospitality of the eight carloads of enthusiasts who met the path-finding party where the road emerges from the almost impassable swamps to the beach, covered the eight miles to the clubhouse of the Florida East Coast Automobile Association, at Daytona, with things running better than the day of the departure from New York, arriving there Saturday afternoon.

Ever since the Oldsmobile party has crossed the border line between Georgia and Florida, its progress through the latter State has been more akin to a triumphal procession than a tour of exploration through a country not graced with anything that can be deservedly given the title of roads, except in short stretches.

The trip from the Georgia line to Jacksonville was characterized by a plunge through the Altamafa Swamps, during the passage of which the car was up to its hubs in mire and water for a large part of the time. The only washing that the car has received, or rather the most complete wash, for the entire trip has been but a succession of alternate mud and water baths, has been received in crossing the unusually deep fords in these southern streams.

Despite the deep sand and frightful holes caused by recent unusually heavy washouts which have undermined the roads in numerous places, a quick trip was made to Jacksonville, where the party was really treated to an ovation, due to the enthusiasm with which the southern press generally has greeted the idea of road improvement. Their coming was looked forward to and as soon as they arrived a self-appointed committee of prominent automobilists undertook to give them a reception as long as they cared to stay. They were shown the sights of the town. The party finally left Jacksonville bound for St. Augustine to the strains of "Dixie," rendered by the local brass band assembled on the sidewalk in front of the hotel to do them honor and speed the parting guests with best wishes for the successful

IN A SOUTHERN GEORGIA COTTON FIELD.

outcome of the trip, for while the stretch from Jacksonville to Ormond was not at all feared, as the roads are fairly good throughout that section, it was thought that the comparatively short span from St. Augustine to Ormond would prove one of the worst parts of the trip, if not altogether insurmountable. The expectations of the party were not disappointed with regard to the good traveling to be found between Jacksonville and St. Augustine, and they rolled along at a good pace over the shell road that joins the two cities. On several occasions, however, it looked as if hours would be lost in getting around some of the heavy washouts that had occurred as the result of recent bad storms. Whenever one of these large crevasses in the road was met with there was no alternative but to look for an opening in the trees sufficiently wide to admit driving the car through in order to find a way around, or, if that was not possible, to attempt to strike some parallel road.

Upon arriving a few miles from the outskirts of St. Augustine, which does not cover a great deal of ground, the party was met by a reception committee, who had come out some distance in several cars to meet them. Not long after leaving St. Augustine, the party was met by a car which had come up to escort them on the last lap of the trip. Though the going was far from favorable, it was nothing like as bad as had been anticipated on this part of the journey. None of the southern States below the Virginia line can boast of much in the way of roads, but when it comes to traversing the Florida swamp country it is difficult to find anything to make comparison with.

It was with a great sigh of relief from every member of the party who had been battling with road difficulties, such as only those who have attempted to explore the backwoods country of the South are familiar with, that they suddenly came to a place where the miserable thicket road opened out onto the beach and their pleasure at making the discovery that this marked the end of their troubles. Eight carloads of enthusiasts were awaiting them at this point, and amid much cheering and congratulations the whole fleet of cars raced down the smooth beach toward the hotel at Ormond, where a stop was made for congratulations of a more substantial order. From this point only eight miles of as good running as ever an automobile was raced over lay between them and the finale of their long journey, and after the congratulations and "have another" had come to an end, they were given three rousing cheers to speed them on the last few minutes' run to Daytona.

PLOUGHING ITS WAY THROUGH A SOUTHERN GEORGIA SWAMP.

The total time consumed in making the trip was twenty days, of which two days were spent in celebrating Christmas, the car being left at Harrisburg, Pa., in the meantime, so that the running time was but eighteen days, or two days less than Mr. Owen predicted was necessary to make the trip.

THERE WERE STRETCHES OF PICTURESQUE ROAD, SOMEWHAT SANDY BUT FAIR GOING, IN SOUTH CAROLINA.

A RUN IN SUNNY SOUTHLAND.

CHARLESTON, S. C., Jan. 12.—They were twelve—cool, clean and respectable looking—when they lined up at the Commercial Club, in Charleston, at 10:38 o'clock on the morning of December 29. Three hours and ten minutes later they were eleven warm-blooded pulsating little machines, strong and vigorous under their layer of brown mud, outside the Pine Forest Inn at Summerville. It was new to most of the people who took part in this first demonstration in force that was ever made on the "dirt" roads of South Carolina—in "these diggin's," as a local newspaper expressed it, reporting the run. Some of the party sat still and held on; one man lay down and established a close acquaintance with gentle mother earth while vainly endeavoring to repair a chain and broken springs, which gave out on one of the rough parts of the road. All had experiences of a more or less exciting nature, and everybody got back home by early candle lighting, as the saying used to be in the up-country before the strenuous age began.

The route chosen was a picturesque one. Leaving Charleston the way lay across the Ashley River and along the Ashley River road, passing the well-known Magnolia Gardens, Drayton Hall and many other plantations that in days gone by were famed for their beauty and the liberal hospitality of their owners. The route was divided into ten controls, and Morton B. Paine,

THE STOP AT THE FIRST CONTROL NEAR CHARLESTON.

Jr., who headed the line in his 20-horsepower Reo official car, distributed the confetti which identified the way. In several places along the route there were stretches of water covering the roadway, four to six inches deep, which in turn would be succeeded by hills, the worst one of which was encountered just before reaching Middleton's Gardens, 17 1-2 miles from Charleston. This hill has a rise of 72 feet in 300, and was a wet, slippery mass of clay. When the pineland was reached a few miles out from Summerville road conditions improved.

At the Pine Forest Inn, Summerville, a delightful dinner was served to the hungry tourists by the host, Captain F. W. Wagener. Plans were discussed among the participating autoists for the formation of the Charleston Automobile Club—the consummation of which is a matter of the near future—and with true Southern spirit, J. H. Rast, who drove a 10-horsepower Cadillac, and E. A. Jenkins, who piloted an 8-horsepower Reo, agreed to test out respective merits of their cars by a race on the homeward bound trip. The official car and two others left in advance of the rest to reach Charleston in time to judge the race at the finish. It was an exciting run, and the participants only slowed down when humanity demanded it, but they slackened not when the slush reached their axles, and when curves were met they took them as Hemery showed us how. The Cadillac got in first, but the Reo was only ten seconds behind. After the racers came the remainder of the party, and every car was accounted for shortly after dark.

IN FRONT OF PINE FOREST INN, SUMMERVILLE.

One of the results of the tour will be the inauguration of a movement for the construction of a fine boulevard from Charleston to Summerville. Pine Forest Inn is one of the noted Southern resorts and ought to be easy of access by automobile. If it can be made so by the Charleston's automobilists it will be.

The cars participating in the run and their drivers were as follows: Official car, 20-horsepower Reo, M. B. Paine, Jr., tour manager; driver, N. H. Blitch; 20-horsepower Premier, F. G. Davies; 20-horsepower Reo, T. B. Jenkins; 20-horsepower Reo, C. M. Gibson; 20-horsepower Reo, E. A. Jenkins; 20-horsepower Reo, J. E. Richards; 20-horsepower Cadillac, Eugene W. Smith; 8-horsepower Reo, N. H. Blitch, Jr.; 8-horsepower Reo, M. B. Blitch; 8-horsepower Reo, H. E. Richard; 8-horsepower Reo, J. W. Martens; 8-horsepower Reo, J. R. Barker; 10-horsepower Cadillac, J. H. Rast.

THE COMING ORMOND-DAYTONA MEET.

When the list was closed at 3 o'clock on Monday last for the races to be held on the Florida sands next week, it became known that more than 100 entries were assured for the meet. Prominent among the high-powered racing cars nominated are the 100-horsepower Darracq to be driven by Wagner; S. B. Stevens' 80-horsepower car of the same make; J. R. Harding's 90-horsepower Mercedes; H. W. Harroun's eight-cylinder 500-pound Harroun; Fred Marriott's 30-horsepower Stanley steamer, and H. E. Rogers' long distance Stanley. The stock events have attracted a great many more entries than were expected, the Stevens-Duryea, Winton, Peerless, American, Wayne, Welch, Elmore, and Stanley steamers being well represented. The manner in which steam has carried everything before it at the kilometer and mile being so well-known, the outcome of the entry of a steamer for the long distances is looked to with considerable interest.

LOVELY RIDGEWOOD AVENUE IN PICTURESQUE DAYTONA.

THREE BILLS ALREADY AT ALBANY.

ALBANY, N. Y., Jan. 14.—There is a very evident attempt to get next to motor vehicle legislation by a number of statesmen of the lower branch of the Legislature. Assemblyman Cuvillier, of New York, has a bill to license all owners, lessees, and operators of automobiles or motor vehicles not propelled by horse power and allowed on public streets and roads, except railroads. The license fee is $25. The bill also provides for chauffeurs of twenty-one years or over who shall pass an examination before getting a license to run a car. If anyone after getting a license shall run over anyone and kill or injure the same he shall have his license revoked and be guilty of a misdemeanor and subject to a year's imprisonment and a $500 fine, or one or the other.

Assemblyman Northrup, of Dutchess, has an amendment to the present motor vehicle law of 1904 which provides that no person shall operate a motor vehicle on the public highways that is geared to run more than one mile in four minutes. The same bill provides for requiring the age of a chauffeur to be stated in the statement he or she makes when getting a badge from the Secretary of State, and provides that a chauffeur must be sixteen years old or more.

Assemblyman Stanley, of New York, introduces again that old bill of his of last year, which provides for a State commission of three and an expensive counsel and a big office staff, and power to regulate automobile affairs. The bill was opposed last year by the New York State Automobile Association.

AN AUTO BILL BY THE MISSOURI MEMBER.

WASHINGTON, D. C., Jan. 14.—Automobile manufacturers and those allied with the motor car industry will be affected by the enactment of a bill introduced in Congress by Representative DeArmond, of Missouri. The object of the bill is to provide for the marking of rates of tariff duty upon manufactured articles and to fix the punishment for the violation of the provisions thereof. The bill provides in effect that upon each and every article of domestic manufacture upon which, if of foreign production and imported into the United States, there would be levied a tariff or customs duty of 30 per centum or more, or a duty amounting to 30 per centum or more of the dutiable value thereof, there shall, before the same is taken from the place of manufacture, be marked, plainly and as indelibly as may be practicable, the rate of duty imposed by the law upon the like article when imported. Whoever shall sell or dispose of any such article not so marked or shall, prior to acquiring it for use by himself, family, or employees, remove, destroy or obliterate any such mark or marking, shall be guilty of a misdemeanor, and for each offense shall be punished by a fine of not more than $5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment; and all such articles not marked as aforesaid shall be forfeited to the United States.

This bill has been referred to the House Committee on Ways and Means. Its enactment into law would make it obligatory upon every automobile manufacturer to stamp his car the rate of duty now imposed upon foreign cars, 45 per centum ad valorem. It is hardly believed that the DeArmond bill will be taken seriously by Congress.

WASHINGTON STATE AFTER GOOD ROADS.

SEATTLE, WASH., Jan. 12.—In its general features the New York law for the building of roads has been adopted by the legislative committee of the Washington Good Roads Association. This law contemplates the distribution of the cost of building roads by the State paying 50 per cent., the county 35 and the local improvement district 15. The maintenance will be assumed by the State. It is estimated that there will be available in the road fund for 1907 the sum of $132,000 and $148,000 the following year. If the legislature passes the bill this winter it means that half a million dollars will be expended on roads in this State in the near future.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows.

Jan. 19-26.....—Baltimore, (Md.) Automobile Show of the Automobile Club of Maryland and Dealers' Association.
Jan. 21-28.....—Los Angeles, Cal., Morley's Rink, First Automobile Show of the Automobile Dealers' Association of Southern California.
Jan. 28-Feb. 2..—Washington (D. C.) Automobile Show, Dupont Garage, Washington Automobile Dealers' Association.
Feb. 2-9.....—Chicago Automobile Show, Coliseum and First Regiment Armory. S. A. Miles, manager, 7 E. 42d Street, New York City.
Feb. 11-16.....—Detroit, Mich., Sixth Annual Automobile Show, Light Guard Armory, Tri-State Automobile and Sporting Goods Association. E. E. McMasters, manager.
Feb. 18-23.....—Fifth Annual Automobile Show, Buffalo, Convention Hall. D. H. Lewis, manager, Teck Building.
Feb. 25-Mar. 2..—Portland, Me., Second Annual Automobile and Power Boat Show, The Auditorium.
March 2-9.....—Chicago, Second Annual Power Boat Show, Seventh Regiment Armory. W. C. Andrews, manager, 19 E. Huron street.
March 4-10.....—Kansas City, Mo., First Annual Automobile Show, Convention Hall. Frank L. Woodward, manager, Willis Wood Theatre Building.
March 18-23....—Providence (R. I.) Automobile and Power Boat Show, Infantry Hall. F. M. Prescott, manager.
April 6-13.....—Montreal, Canada, Second International Automobile and Sportsman's Exhibition. R. M. Jaffray, manager, 309 W. Notre Dame street.
April 8-13.....—Pittsburg, Pa., First Annual Show of the Pittsburg Automobile Dealers' Association, Duquesne Garden.

Race Meets, Hill Climbs, etc.

Jan. 22-26.....—Ormond-Daytona (Florida) International Race Meet, Florida East Coast Automobile Association.

Motor Boat Races.

Jan. 29-Feb. 1..—Palm Beach, Fla., Annual Races of the Palm Beach Power Boat Association.
June 8.....—670-Mile Ocean Motor Boat Race, New York to Bermuda. Motor Boat Club of America and Royal Bermuda Yacht Club.
Sept. 2-6.....—Jamestown (Va.) Exposition, Motor Boat Races.

FOREIGN.

Shows.

Jan. 18-26.....—Birmingham (Eng.) Automobile Show.
Jan. 25-Feb. 2..—Liverpool Motor Show, Tournament Hall.
March 7-16.....—London, Olympia Commercial Vehicle and Motor Boat Show.
April 6-13.....—London, Agricultural Hall Motor Show.
May 1-15.....—Madrid, Spain, Automobile Exhibition, Palace of Fine Arts, Royal Automobile Club of Madrid.
May 15-26.....—Third Annual Swiss Automobile and Cycle Show, Zurich.

Race Meets, Hill Climbs, etc.

Feb. 23-27.....—Voiturette Contest, Automobile Club of Italy.
March 20-27....—Nice (France) Automobile Week.
April 1-15.....—Spring Wheel Competition.
April 21.....—Targa Florio Tour (Sicily), Auto Club of Milan.
April 25-28.....—Touring Contest, Automobile Club of Touraine.
April 28.....—Chateau Thierry Hill Climb.
May 1-15.....—Paris-Madrid Touring Competition.
May 24-27.....—Voiturette Contest, Automobile Club of Austria.
May 29-June 1..—Irish Automobile Club Reliability Trials.
June 3-12.....—Herkomer Cup, Automobile Club of Bavaria.
June 14.....—German Emperor's Cup, Taunus Circuit, Imperial Automobile Club.
June 24-29.....—Scottish Reliability Trial, Scottish Automobile Club.
June 25-July 8..—Grand Prix, Automobile Club of France. (Exact date to be decided upon.)
Aug. 11-20.....—Coupe d'Auvergne, France.
Aug. 18-22.....—Ardennes Circuit (Belgium) and Coupe de Liedekerke.

WINTER DOINGS IN AUTOMOBILE CLUBDOM

President Caverly, of Washington Club, Energetic.

WASHINGTON, D. C., Jan. 14.—Robert B. Caverly, the newly-elected president of the Automobile Club of Washington, is losing no time in getting "on the job." In a circular letter to the members of the club he says, among other things: "It will be my pleasure to carry out the constitution and by-laws as adopted and to the best of my ability increase the pleasures and privileges of the members in the objects for which the club was originally organized. It will be impossible for any large amount of success to ensue without the hearty co-operation of every member, and to this end I avail myself of this opportunity to request each member to advise me fully as to his ideas on the following subjects: Please give me your suggestions looking to a series of entertainments that will interest the membership during the winter and early spring months. How do you stand on the question of stated tours during the early summer and fall? Are you in favor of club runs extending to distances that require more than one day to go and return? It is my intention to interest all our members in the ease with which runs for several hundred miles through the valleys of Virginia and Maryland can be attended without risk of failure and with the consequent great pleasure to be derived, as I can attest from an extended experience. The pleasure of automobiling, while it has grown enormously in Washington, is as yet nothing to what it will be in the next few years, and membership in this club will be highly sought with each succeeding year."

President Caverly is to be congratulated on the steps he has taken to awaken interest in the club, and it is evident that during his administration the Automobile Club of Washington is going to take rank with the leading clubs of the country.

A. C. C. of N. J. Wants All Vehicles to Carry Lights.

NEWARK, N. J., Jan. 14.—The Associated Automobile Clubs of New Jersey, at its recent meeting, held at Trenton, appointed a committee to draft a bill to be introduced at the present session of the New Jersey Legislature compelling all vehicles, horse-drawn or motor-driven, to carry lights at night. This committee consists of Frederick R. Pratt, the president of the State body; J. H. Wood, president of the New Jersey Automobile and Motor Club, and George A. Post, president of the North Jersey Automobile Club. It is the intention of the State body to revive an old law upon the statute books defining the rules of the road and the rights of all users of the public highways. The new Legislative Committee of the State association will be announced in the near future.

Quaker City Ladies to Have a Club.

PHILADELPHIA, Jan. 14.—The Ladies' Quaker City Motor Club, composed for the most part of the wives, sisters, cousins and aunts of members of the Quaker City Motor Club, has been organized. At the Hotel Majestic last Tuesday a temporary organization was effected by the election of Mrs. Joseph J. Martin as president, Mrs. Charles J. Swain as vice-president and Mrs. Edward B. Fincke as secretary. Over a score of fair Quakeresses have already signed the membership roll, and the recruiting committee is working with such a will that when the club meets for permanent organization a fortnight hence it is believed that the total will exceed the half hundred mark.

The charter members include Mrs. Joseph D. Bucher, Mrs. Robert A. Pitts, Mrs. Thomas E. Cookman, Jr., Mrs. Harry F. Cook, Mrs. William H. Noblitt, Mrs. Frank M. Chandler, Mrs. William Laycock, Mrs. William Ingram, Mrs. James M. McCartney and Miss Ida Benezet.

The Quaker City Motor Club is arranging for a monster hill climb, to be held on Memorial Day over a course in the neighborhood of Chestnut Hill.

Furnishings for New Chicago A. C. Clubhouse Chosen.

CHICAGO, Jan. 14.—Progress on the new home of the Chicago Automobile Club has not been as rapid as many of the members would like to have it, and in order that, once the building itself is up, no further delay shall be encountered in making the interior ready for the grand housewarming with which the new quarters will be thrown open, President Ira M. Cobe has been planning a surprise for the members. He has been devoting considerable time to hastening the work on the big building that is going up at 13-15 Plymouth court, and has just issued an official prospectus showing how the interior of the clubhouse will look when it is finally ready.

Starting with the basement Mr. Cobe has selected for the grillroom furniture of Mission style finished in green oak. The walls will be cement, marked off in squares to imitate stone, being set off at the top with a wide frieze depicting various colonial scenes, the subjects of most of which, it is expected, will be drawn from the history of the early days of Chicago. The bowling alleys will also be on this floor and will be of the most modern type in everything that concerns their construction and equipment. The color scheme in the latter will harmonize with that of the grillroom. On the second floor there will be a lounging room furnished with large arm chairs finished in old Spanish leather. At each end of the room there will be a large fireplace, the color scheme of the room itself being in green of two shades. On the same floor there will also be the ladies' parlor, furnished with furniture of the style of Louis XV., which will be brought from abroad. This room will be decorated in paneling of the same style, the color scheme being in French gray. The floor above will house the main cafe, which will be finished in paneling, the color scheme also being French gray and Pompeian red, while two entire floors will be devoted to sleeping apartments, which will be furnished with brass beds and mahogany furniture throughout.

Bay State A. A. Elects Officers, and State Organization Meets.

BOSTON, Jan. 4.—Pronounced interest characterized the largely attended annual meeting of the Bay State Automobile Association at the clubhouse on Dartmouth street January 7. Reports presented by officers and committees showed that the association is in excellent shape financially and socially. President Lewis R. Speare in his report reviewed the work of the year. Secretary James Fortescue reported that the association now has 700 members and is in a prosperous condition. With the increase in dues, which goes into effect this year, it is expected that the treasury will be enriched by several thousand dollars annually. In the election of officers very few changes were made. President Speare, Vice-president Harlan W. Whipple and Secretary Fortescue were reelected. Harry Knights was chosen treasurer in place of Herbert L. Bowden. The new board of directors is as follows: Charles E. Fay, of the Ford Company; J. C. Kerrison, Arthur Hinchcliffe, of the Winton branch; A. P. Underhill, of the Reed-Underhill Company, and George W. McNear, of Quinsler & Company.

Before the Bay State meeting there was a meeting of the Massachusetts Automobile Association, attended by President Elliot C. Lee, of the Massachusetts Automobile Club; President L. R. Speare, of the Bay State A. A.; President J. P. Coughlin, of the Worcester Automobile Club; President Haynes, of the Springfield Automobile Club; Charles Leonard, of the Leominster Automobile Club, and Treasurer J. C. Kerrison. The proposed legislation in Massachusetts was discussed and plans were also considered for the conduct of the association under the new rules of the A. A. A.

THE AUTOMOBILE

Vol. XVI Thursday, January 17, 1907 No. 3

THE CLASS JOURNAL COMPANY,
Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:
A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:
A. B. SWETLAND, Business Manager
L. R. SMITH B. FRANK BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. H. GILL, 625 Monadnock Block, Chicago, Ill.

Cable Address - - - - - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:
United States, Canada and Mexico, - - - - - - One Year, $2.00
Other Countries in Postal Union, - - - - - - One Year, $3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:
ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride St., Ludgate Circus, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly).

Copies printed in 1906,	- - - - - - - - - - -	791,000
" "	This Issue, - - - - - - - - - -	17,000
" "	Since January 1, - - - - - - - -	50,500

The Greatest American Automobile Show. Seven years of automobile shows, each one so much better than the last, both in point of the achievements exhibited as well as the manner in which they have been staged, have led New York and the automobile industry as a whole, which sends its representatives by the thousands to attend the metropolitan event, to expect a great deal. Seldom has expectation been more completely fulfilled. The history of the past seven years of automobile show-holding has been so frequently reviewed of late that it would be superfluous to attempt to recount it here, but the paucity of material available as well as the crudeness of its surroundings, as installed in the first event of the kind, may well be recalled at the moment when the magnificent spectacle presented by the Garden during the current week is holding the attention of the automobile world, which is daily embracing a greater and greater proportion of the general public.

Planned almost a year in advance, the matter of providing an appropriate setting that should surpass anything of the kind hitherto attempted—a task involving a vast amount of labor and a large expenditure—has been so carefully carried out that not a detail was lacking to mar the completeness of the picture when the doors were thrown open Saturday night. Never has the automobile appeared to better advantage. The show as it stands is a fitting culmination of seven years of persistent effort, which will be found difficult to surpass on future occasions, regardless of the amount of time or money that may be devoted to the work of converting the bare walls and ceiling of the building that houses it into a scene, every detail of which becomes blended in the complete ensemble.

As for the cars themselves, it would be difficult to add to what has already been said many times over regarding the advanced stage of construction and design that they represent. American builders were slow in grasping the essentials of design as established by their forerunners abroad, and for a long time were unwilling to admit superiority when they saw it; but, once the period of indecision was past, progress came so fast that the original handicap was soon made up and the mark set by it left far to the rear. Nothing exemplifies this better than the present show, in which the flower of automobiledom, as represented by the chief makers on either side of the Atlantic, are ranged side by side. Time was when "imported" stuck out all over the foreign production, and it was akin to crossing a frontier merely to go from the stand of a home builder to that of one of his competitors from across the pond. How completely the distinction has disappeared could hardly be better evidenced than by the frequency with which the exhibitors' signs and the nameplates on the cars themselves are called upon to identify their country of origin. Dollar for dollar, there is nothing superior to the American car in whateevr light it may be considered, and, after all, that is the crucial test of worth.

Present Status of the Two-Cycle Principle. Compared to the number of years that were required to develop some of the best known inventions in other lines of industry, the amount of time that has been devoted to a practical study of the problem presented by the evolution of the two-cycle principle of the internal combustion motor is but a mere bagatelle. Yet there are critics who point to the fact that during the seven or eight years in which the two-cycle motor has been a factor in the automobile industry, but one firm has had the courage of its convictions. That but one builder has consistently adhered to this principle in building automobile motors is a matter of common knowledge, but that this is to be considered as being conclusive proof of its unfitness for the purpose in question would be absurd. Had it not been for the dogged persistency of some inventors in adhering steadfastly to their ideals in the face of ridicule, the advent of numerous time and labor-saving inventions might have been postponed indefinitely. Daimler himself was regarded as a harmless lunatic for attempting to combine a gas engine and a carriage, but it is safe to say that had he not persisted the automobile would not have been so far advanced.

Between those extremes of optimism that predict the final arrival of the two-cycle motor at a stage where it will have swept all before it, and that of the reverse, which considers the time and money spent on the further development of the principle as utterly wasted, there is a sane medium which is representative of some of the best talent in the industry. Both the possibilities, which are great, and the difficulties, none of which are insurmountable, are recognized, and that the former will, in time, be realized to a far greater extent than they are at present is a foregone conclusion. That the two-cycle motor in its present stage of development, as represented by the power plant of the cars turned out by the firm specializing on this principle, is an efficient and practical machine will not be denied by anyone who is familiar with its capabilities, not to omit its long record of extremely creditable performances under conditions calculated to test the merits of any piece of machinery beyond the breaking point. That it has been able, not alone to survive these, but to come out of them in a manner not less creditable than was displayed by others of the standard type, is indicative of the promise its further development holds out. Whether, in the end, the principle will be proved to represent the only path to that extreme of simplicity, combined with a high degree of efficiency that is the aim of every designer, is something that cannot be predicted. Suffice it to say, its past shows what can be done, and if more initiative were taken there is little doubt that its position in the automobile world would be more rapidly advanced. It is with this in view that we have encouraged a statement of opinion on the subject.

THE MUNCHAUSENS OF AUTO PUBLICITY.

Little Hungary, a well-known Bohemian resort in East Houston street, Tuesday night held a noted assemblage of disciples of Munchausen, whose tales were the wonder of his time. The publicity experts of automobiling sometimes travel faster than the cars whose deeds they exploit, and for purposes of mutual offense and defense they organized under the somewhat startling title of "To H—l with Booming Anybody Society, Limited." "Confidentially," states Duncan Curry, "they told each other what they thought of the automobile game in general and each other in particular."

These were the notables gathered round the festive board: E. Ralph Estep, Packard; F. L. Faurote, Oldsmobile; R. H. Johnston, White; H. T. Clinton, A. L. A. M.; Charles W. Mears, Winton; Leroy Pelletier, Ford; George Bolles, Royal; H. W. Grant, Maxwell; J. A. Kingman, Locomobile; T. F. Moore, Wyckoff, Church & Partridge; W. L. French, Matheson; Charles Culver, Knox; R. L. Dunn, Pope; George T. Davis, Thomas; J. W. Drown, Corbin; C. H. Rockwell, Autocar; A. B. Tucker, a wholesaler; F. Ed. Spooner, another wholesaler; C. H. Huntington, Columbus; Alex. Schwalbach, Brasier; Jack Hitchcock, of Philadelphia; Joe Ryan, of Chicago. Of course, Press Agent Arthur N. Jervis, of the Garden Show, was a prominent figure, and Alfred Reeves, general manager of the A. M. C. M. A., attended the function, of which "Billy" Young served as bouncer, though his services were not called into play.

A. C. A. PRESIDENTS JOIN THE "FINEST."

Entitled to be equipped with a billy, a regulation six-shooter, and a badge issued by the Municipal Police Department, five members of the Automobile Club of America will henceforth have the weight of law and authority on their side, and will make it their business to arrest for overspeeding and reckless driving wherever they see it. They are President Colgate Hoyt and ex-Presidents Winthrop E. Scarritt, George F. Chamberlin, David Hennen Morris, and Alfred R. Shattuck. Messrs. Hoyt and Scarritt have already had their applications acted upon favorably by Commissioner Bingham and have been duly enrolled as special policemen of the city of New York, Nos. 27 and 347 respectively.

When approached on the subject, the Police Commissioner was of the opinion that the newly added members to the special "force" would not be compelled to wear uniforms, but they will have to call at Police Headquarters once a month and sign the roll blotter, and in case of riot or emergency they are apt to be called upon at any time to do police duty. This is interesting in view of the fact that it is not a felony to assault a special policeman, though such is the case where a regular guardian of the peace is concerned. If necessary to aid in the prosecution of offenders and aid the police in general in this matter, the club will furnish the services of a lawyer. The A. C. A. intends to do its part in ridding the metropolis of the scorching drivers.

EUROPEAN INVASION TAKES SHAPE.

Preliminary arrangement for the invasion of Europe next June and July, as planned by George Dupuy, were discussed at a meeting at the New York Motor Club, Tuesday. The "invasion" is to consist of a 4,000-mile tour in France, Italy, and other countries by fifty or sixty American automobiles. An American Gold Cup for the trip will be donated by W. K. Vanderbilt, Jr., E. R. Thomas of Buffalo, Jefferson deMont Thompson, and other automobile sportsmen. Several important manufacturers have expressed their approval of the tour, and E. R. Thomas, of Buffalo, and W. J. P. Moore, of New York, have signified their intention of entering cars. An organizing committee has been appointed, consisting of E. R. Thomas, chairman, George N. Pierce, A. L. Riker, J. D. Thompson, H. A. Lozier, E. S. Partridge and W. J. P. Moore.

BRUSH RUNABOUT CO., OF DETROIT.

Detroit, Mich., Jan. 14.—Detroit's ever-thriving automobile industry has given birth to another member of the rapidly-increasing family, in the Brush Runabout Company. This firm, which was recently incorporated in New Jersey, with $200,000 capital, will shortly commence operations in this city. The concern has purchased the control of the Eclipse Manufacturing Company, of Fort street east, which will be converted into a foundry where engines will be manufactured, the other parts and assembling to be done at the Briscoe Manufacturing Company.

As the name of the company implies, attention will be paid to the construction of runabouts only. The new factory, encouraged by the success and popularity the $500 Ford runabout has attained, will enter a competitive field and plans to put a runabout on the market at as low a price as has the Ford. Distinctive features from the Ford type will be a single cylinder vertical engine and solid tires. A. P. Brush, who is connected with the firm and who will be designer, will be remembered as the man who made the Cadillac single cylinder famous.

A number of well-known local and eastern capitalists are behind the project, which should assure ultimate success. The officers of the company are: President, George B. Yerkes; vice-president, F. A. Harris; secretary, Emil D. Moessner; treasurer, A. C. Miller.

Though the new car has been shown in private to those directly interested, it will not be put on public exhibition until the Detroit automobile show. The general design of the engine, the lightness of reciprocating parts, combined with its relation to the spring suspension, renders the vibration almost unnoticeable, and the noise is reduced to a minimum. By moving the hood all vital organs of the car are uncovered. The cars will be ready for delivery about April 1, and will be shipped at the rate of fifteen a day till the season's run of 2,500 is delivered. Six thousand is the figure for 1908, after which date 10,000 cars will be turned out yearly.

PERCY OWEN TAKES ON A FOREIGN LINE.

Percy Owen, for many years identified with the selling end of the Winton interests, and for the past year or so eastern sales manager of the Aerocar Company, has just severed his connection with the latter concern to undertake the general sales agency in this country of the Bianchi car. The latter is an Italian production, designed on lines made familiar by the Mercedes and Fiat cars, and is built by one of the largest concerns in the Peninsula. Three chassis, of 30, 40 and 70 horsepower respectively, are listed. A New York branch has just been opened at Seventy-first street and Broadway, and Mr. Owen expects to sail for Italy before the end of the month to hasten deliveries. The company is building three high-powered racing machines.

GEORGE H. DAY GOES SOUTH TO REST.

Owing to the long-continued strain he has been laboring under in attending to the executive work in connection with this week's show, George H. Day, general manager of the Association of Licensed Automobile Manufacturers, has been ordered South by his physician to rest. The latter considered that he was in danger of physical breakdown several days before the opening of the show, but Mr. Day insisted upon remaining long enough to get at least a glimpse of the fulfillment of the task that he had been so largely instrumental in carrying out. He left after attending a meeting of the executive committee Monday afternoon.

AUTOMOBILE TIRE COMPANY OF TRENTON, N. J.

A newcomer to the tire field is the Automobile Tire Company, of Trenton, N. J., in which several well-known automobile manufacturers are said to be interested. C. H. Semple has accepted the presidency of the new company, having resigned as general sales manager and secretary of the G & J Tire Company, of Indianapolis, Ind.

QUICK SETTLEMENT ON A. C. A. SHOW.

The seventh annual Atuomobile Show of the Automobile Club of America, participated in by the members of the American Motor Car Manufacturers' Association and the Motor and Accessory Manufacturers, and also open to other automobile manufacturers, closed its doors but a month ago. A financial statement has just been published showing a net profit of $52,000. In accordance with the profit-sharing policy of the exhibition committee of the A. C. A., one-half of the net proceeds of the show, amounting to 45 1-2 per cent. on the amount of space rental paid, will be refunded to exhibitors. Members of the A. M. C. M. A. also benefit by the preliminary association rate of 20 per cent. below the regular figure, making a return of 65 per cent. on price paid for space. This is said to be a larger refund than has ever been made to exhibitors in any automobile show held in America.

MINNEAPOLIS SHOW, MARCH 2 TO 9.

MINNEAPOLIS, MINN., Jan. 14.—The Minneapolis Automobile Dealers' Association has secured the new First Regiment Armory for the first automobile show ever held in the Northwest. The show will take place during the week of March 2-9, under the managership of an expert from the East, and will be the most pretentious ever held west of Chicago. The Western Passenger Association has granted a railroad rate of a fare and one-fifth, for the entire Northwest country. The sum of $3,000 has been pledged by the Minneapolis dealers who are behind the show, and $5,000 will be subscribed if necessary for the work of organizing the big exhibition. Negotiations are on with an Eastern show manager, to take entire charge, and no effort will be spared to make it an unqualified success. The Armory has but recently been completed, and the exhibition will be one of the first public functions to be held in it.

BUFFALO'S SHOW IN CONVENTION HALL.

BUFFALO, N. Y., Jan. 14.—Arrangements have been completed for the automobile show to be given this year under the auspices of the Automobile Club of Buffalo and the Buffalo Automobile Trade Association. Space allotments were made last Thursday. Secretary D. H. Lewis had much difficulty in obtaining Convention Hall, but finally secured the place for the week of February 18-23. The electrical display will be one of the features of the show. One piece alone will contain 1,000 lights.

At the recent annual meeting and banquet of the Buffalo Automobile Trade Association the following officers were elected: President, J. A. Cramer; vice-president, W. C. Jaynes; secretary, D. H. Lewis; treasurer, J. J. Gibson; executive committee, E. C. Bull, J. B. Eccleston, and G. H. Poppenberg.

,COAST AUTO SHOW IS PLANNED.

San Francisco will hold its first automobile show the latter part of February in the new skating rink near the Golden Gate Park, a building having more than seventy thousand square feet of show space. The proposition to hold a show met with instant favor among local dealers, more than thirty being present at the first meeting. Arrangements are being perfected rapidly by the dealers, assisted by the Automobile Club of California. The following officers have been elected: President, J. W. Leavitt; secretary, Herbert Choynski; manager, Max Rosenfeld.

IMPORTERS HOLD A RIVAL SHOW.

In a cleaned-out Fifth avenue picture gallery several importers are holding their "show" concurrently with the one in Madison Square Garden. The exhibit consists of a Renault runabout and a Renault touring machine, both last year's models; a Westinghouse, with double phaeton body and a 30-horsepower chassis; a Delahaye chassis, a pullman and a landaulet; a Cottin-Desgouttes, and a Pilain chassis.

GLIDDEN MILEAGE NEARLY FORTY THOUSAND.

BOSTON, Jan. 14.—Mr. and Mrs. Charles J. Glidden, the world girdling automobilists, accompanied by Miss Martha Waldron Barron, of Boston, have returned after their disastrous experience in touring on the railroad tracks in Mexico. They left here in Mr. Glidden's Napier two months ago, and since then have traveled 6,168 miles, of which 5,022 miles were on railroad tracks. Mr. Glidden's car was derailed near Mexico City and wrecked. He has had it shipped to England for repairs, and next season will tour in the British Isles. Speaking of the wrecking of his car, Mr. Glidden says that nobody was to blame.

"We were running twenty-eight miles an hour," he says, "on a straight track when a rock wedged in between the main track and a guard rail was struck by the flanges of the left wheels, and we jumped the rails and ran about ninety feet. The forward wheels collapsed, and we were all spilled out, but no one was injured. Had not the wheels collapsed the car would have run up on a bank, overturned, and undoubtedly buried us all underneath with serious results. I tapped the telegraph wire, put on a set of instruments that I was carrying, and immediately opened up communication with the train despatcher at Mexico City, securing assistance in a short time in the shape of a special train. We arrived in the city of Mexico on the time planned before leaving Boston, December 31."

CINCINNATI'S SHOW AND ENTHUSIASM.

CINCINNATI, Jan. 14.—Cincinnati's first auotmobile show will take place January 21-26, and will be held in the Fireproof Storage Company's building, at the intersection of Walnut Hills and Avondale, two of the Queen City's wealthiest suburbs. All the space has been taken by exhibitors. There will be forty-seven different makes of cars shown by the twenty or more dealers of the city, who organized under the name of the Cincinnati Motor Car Dealers' Company for the purpose of bringing Cincinnati to the front as an automobile town. Besides the cars shown, moving pictures of the Vanderbilt Cup race, and two of the cars that took part in that event, will be seen.

It will be remembered that a few years ago pessimistic people asserted that automobiles would never find favor in a town that was "built upon seven hills." The sale of automobiles for the year 1906 was 100 per cent. more than the previous year.

THE PROFESSIONAL CHAUFFEURS' CLUB.

At the annual meeting of the Professional Chauffeurs' Club of America, held at the clubrooms, 1775 Broadway, New York City, the officials for the year 1907 were elected as follows: President, W. H. Walter; first vice-president, Fred Brevogel; second vice-president, Curt Schmidt; treasurer, W. H. Chase; recording secretary, George Loveday; corresponding secretary, P. A. Larter; governors, O. J. Byers, F. Engelsberg, F. Walsh, L. Regan.

The club has a membership of 250, is strong financially, and is looking forward to a successful year and a new clubhouse in the fall, the present quarters proving entirely inadequate.

BALTIMORE'S CLUB AND BALTIMORE'S SHOW.

BALTIMORE, Jan. 15.—With the indorsement of the Automobile Club of Maryland, which has taken over the second annual show, which will be held at the Lyric, January 21 to 26, there now seems to be no doubt that the event will be one of the largest of its kind ever held in the South. Many new features have been arranged for the show this year, and more will follow visits to the New York show by the committee appointed to attend the mammoth show in New York this week in the interest of the local show. Notwithstanding the fact that B. R. Johnson, manager of the show, succeeded in obtaining one of the largest halls in Baltimore, they will be cramped for room according to the number of exhibitors, which now nears the fifty mark. The pictures of the Vanderbilt Cup race and several other events will be shown.

THE CONTINUATION OF THE GARDEN SHOW STORY

EXHIBITS OF VARIOUS KINDS.

Auto Improvement Company.—At this exhibit is shown an extensive line of auto sundries both for use on the car and in the garage. The line includes the "Ever Ready" tire tool, for putting on and removing clincher tires; vulcanizers for use both on the car and in the garage, and the "Ever Ready" carbureter, the special feature of which is that it is especially adapted for the heavier liquid fuels. It is provided with two jets and float chambers, one of which can be used for a light grade of gasoline and the other for the heavier fuel after the engine is started.

H. A. Allers & Co.—This firm exhibits "Solarine" metal polish in both the powder and liquid form. Faith in the merit of the article is shown by giving away samples.

Avery Portable Light Company.—The ability to merely turn on the gas whenever wanted and turn it off ditto, without having to fuss with carbide or the necessity for cleaning out a generator, has appealed so strongly to the average autoist that the lighting tank long since came to be considered an indispensable part of the equipment of the up-to-date car. On this account the exhibit made by this company is a reminder to the visitor of what he has been saved by science.

Brennan Motor Manufacturing Company.—This concern shows a line of motors and transmissions ranging from a two-cylinder horizontal opposed to a four-cylinder water-cooled with mechanically operated inlet valves. The concern makes various sizes, both air and water cooled. The transmissions include both the two-speed planetary and the selective type for either side chain or shaft drive. Both transmissions and motors are furnished with annular ball bearings if desired.

Energine Refining Company.—This company exhibits samples of its Energine fuel for automobile and motor boat use of which it is the sole refiner. This fuel is claimed to possess the advantages of greater power than is obtainable with gasoline without the drawbacks of the latter, not the least of which is its objectionable odor.

General Electric Company.—The exhibit of this company is a magnet that attracts every visitor that comes its way to note the operation of the Mercury Arc rectifier, which is shown in operation. In the three years that this device has been on the market, both for public and private garages, where nothing but an alternating current service is obtainable, it has become too well-known to require description. It has met with wide-spread acceptation which is becoming greater as its advantages are better understood.

Globe Machine and Stamping Company.—Every variety of automobile part has been produced by this firm since the automobile industry came into existence. At their stand, which was in charge of Albert F. Schroeder, general manager, and O. A. Loew, chief mechanical engineer, are to be seen ball races, retainers, brakes, brake drums and bands, hub cups and flanges, gaskets, fan blades, sector tank heads and heavy metal, shallow shell and thin metal deep shell stampings in general. Not the least item of interest in the Globe exhibit is a few sample sheet shells or caps with internal threads. The unique feature is the fact that the threads had been generated on a punch press.

E. F. Hodgson.—The autoist who has been confronted with the problem of where to stow his car without going to the expense of putting up a building and disfiguring his grounds in the process finds that his difficulty disappears at this stand. The problem is solved by the Wigwam portable garages and houses shown by this manufacturer.

Pantasote Leather Company.—This is an exhibit that interests the manufacturer of cars and will as long as leather upholstery continues to be the standard finish for the interior of the up-to-date car. Leathers of this make of every imaginable shade and texture are shown, all of them being finished with a surface especially adapted to withstand the severe usage given the upholstery of an auto.

Thos. Prosser & Son.—This firm is the agent for Krupp Special Chrome Nickel Steel, which they supply in either finished parts or in the rough. The exhibit includes a line of finished and partially finished parts as well as chips and parts which have been bent and broken to show the qualities of the metal.

Springfield Metal Body Company.—This firm shows a number of up-to-date styles in aluminum bodies, in addition to a line of special tops, the construction of which is patented.

Spicer Universal Joint Manufacturing Company.—The rapid increase in the employment of the shaft type of drive has brought with it an unusual demand for universal joints, of which those shown by this firm are representative examples. They are distinguished by extreme simplicity and generous proportion of working parts that makes for durability and satisfactory service, no nuts, bolts, screws or other fastenings being employed in their design. A number of styles are shown, such as the combined joint and brake drum, a universal slip joint with flange coupling, also double universal joints and complete sets.

C. A. Shaler Company.—This firm shows the Shaler electric vulcanizer, which is adapted for repairing cuts in shoes and also punctures in tubes. The device can readily be connected to any alternating or direct current incandescent circuit, si economical of current, and can be carried even in a light runabout without inconvenience.

Valentine & Co.—This firm exhibits a line of colors and varnishes suitable for automobile work. The company's long experience in supplying goods of this description to the carriage trade is a guarantee of the quality.

DEALERS IN GENERAL ACCESSORIES.

Auto Supply Company.—This concern displays a representative exhibit of the best known makes of accessories and they are also importers of a complete line of French ammeters and volt meters as well as goggles. In addition to the array of

smaller accessories, they also carry a complete assortment of engines, transmissions, differentials, wheels, forgings, and parts of well-known makes for builders, assemblers, and repairmen.

Charles E. Miller.—The very name Miller stands for everything that pertains to the automobile. For lack of space his exhibit is confined to the smaller and more portable types of goods, but there are more where they came from. In fact it would be easy in an hour or two with Miller's vast stock at one's disposal to pick out the components of an entire car from the ground up, including every possible accessory that could be put on it. Motors, transmissions, drives, wheels—everything in short that goes to make up an automobile, is handled by Miller.

Motor Car Equipment Company.—It is difficult to know where to begin in attempting to describe the multi-varied stock displayed by such a firm as this, covering as it does a range of supplies running from cotter pins up to tires, lamps, clothing, batteries, and what not, all of which are shown in what appears to be a practically endless array, a great many makes of the same thing such as speedometers, accumulators, and the like, representing the product of the best known makers being carried.

New York Sporting Goods Company.—As its name indicates, this concern specializes more on the accessory end, handling more particularly such lines as lamps, accumulators, dry cells, ammeters and voltmeters, tires, clothing, and the like of representative makes, of which it shows a comprehensive assortment at its stand.

Post & Lester.—This concern has the distinction of handling one of the most representative lines of imported automobile accessories to be found in this market, in addition to as complete an assortment of domestic supplies as it is possible to imagine. Some of the specialties from the other side are the well-known Volier horns and the E.I.C. racing spark plugs.

AUTO HORNS AND CHIMES.

Gabriel Horn Manufacturing Co.—The chief feature of this firm's display is the 1907 model of the Gabriel horn, which consists of but a single tube instead of the multi-tube types formerly popular. It gives three distinct tones blended harmoniously, the regulation of the tone being readily controlled by the operator at will. As the demand for the three-tube horns with two-inch tubing and the four-tube with 1 1-2-inch tubing is large, these types are continued, and various models are shown.

Gray-Hawley Manufacturing Company.—This concern displays the patented Autochime device to be used in connection with the auto muffler. It is a practical three-tone chime of extreme simplicity, involving no delicate or complicated parts in its construction. It is shown separately and in connection with the Gray muffler, making a complete combination outfit. Motorchimes and chime whistles are shown.

CLOTHING AND GLOVES.

Morrison, McIntosh & Company.—The Grinnel ventilated and air-cooled "rist-fit" gloves and gauntlets comprise the specialty displayed by this concern in a number of styles designed with a view to meeting the needs of auto and other drivers. The material employed in their construction is "reindeere" leather, and the special design keeps the hand cool in warm weather and still excludes oil and dirt.

Syracuse & Elbridge Glove & Mitten Co.—As their name indicates, the display of this concern consists of a full line of specially designed hand coverings for the auto driver.

Syracuse and Elbridge Glove Company.—This concern makes a specialty of automobile gauntlets. These are made with reinforced palms and fingers and also are arranged so that the seams are protected from wear; in short, it is claimed that the glove is especially suited to the hard use which it must necessarily stand when worn around an auto.

CASTINGS.

Light Manufacturing & Foundry Company.—Probably no other firm, in this country or abroad, has specialized to the same extent on aluminum castings as has this concern—a fact that is recognizable in the showing of its products. It is not going too far to say that their success in turning out crankcase and gearbox castings, entirely free from flaws and defects, and at the same time with a use of the minimum amount of metal, has contributed very largely to making the high-powered motor for automobile use a possibility.

Manufacturers' Foundry Company.—At first sight it appears almost inconceivable to the layman that the intricate shapes given the cylinder of the up-to-date motor with its water-jackets surrounding the valve pockets, could be reproduced in such a material as cast iron with the clean and accurate lines that distinguish the work shown by this company, of which a number of examples are on display, several of them being cut sectionally, so as to reveal the uniformity of the metal throughout as well as its entire freedom from blowholes or other defects that would be apt to render it worthless.

WHEELS AND RIMS.

Midgley Manufacturing Company.—Tubular steel wheels constitute the manufacturing line of this company. Starting from the point that a wire wheel did not look right and a wooden wheel did not work right, the Midgley company set to work to produce something which would look like a wood wheel and work like a steel one. The Midgley is made wholly of steel. Its process of manufacture is to first cut the sheet metal into proper sizes and form it into required shape under heavy presses. The rims or channels are formed under a specially built press; the under body or felloe is formed in the same way, and after the spoke holes have been punched the two are clinched together. The several parts are brazed together, the entire wheel being immersed in a molten bath of brass which flows into every corner and covers every surface with a layer of the metal. This makes the wheel one single piece; there is not a seperate bolt pin or rivet in it.

Schwarz Wheel Company.—Patent wooden artillery wheels occupy the attention of the Schwarz company. A difficulty in wood automobile wheels has been the tendency to loosening of spokes under strain, the wheel becoming shaky, ceasing to run true and finally becoming useless. In the Schwarz this is overcome by the construction of the spoke, the tenons of which interlock in a fashion to render them utterly immovable. The spokes are put together at one time under pressure, each interlocking with its neighbors. Distances between the spokes are mathematically the same throughout. No hub flanges are required in making the wheel; they can be put on at any time, but are practically unnecessary until the wheel is to be put on the axle. The fact that the wood wheel may be made complete, the metal rim or channel for the tire put on, and the entire product shipped without a hub must commend itself to the practical observer.

Phineas Jones & Co.—Half a century of experience in wheel building is a record to be proud of, and that it is one that has brought with it the "know how" of the business of making wheels of the right kind, no matter how hard the service to which they are to be subjected, is plain from the attractive exhibit made by this firm of a part of the car of which the average autoist rarely thinks, except when it happens to cause him trouble.

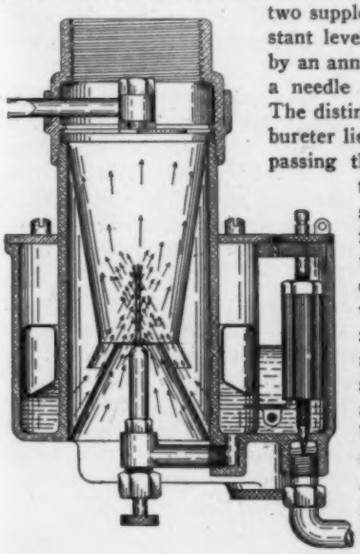
Turner & Fish Company.—Indestructible steel wheels manufactured by the Turner & Fish Company have the advantages of durability, being absolutely true, easily cleaned, collecting less mud and dust than spoked wheels. The wheel is made of two sheets of high-carbon, two-pass cold rolled steel, each sheet being drawn and formed in a skilled way. When the disks have been formed the rivet holes are punched and the halves are then riveted together, practically making a solid background for the spokes. The wheel is now ready for the hub and rim. Three

gauges of metal, weighing from 11 1-2 to 19 pounds to the wheel, are used in manufacture, making it applicable to all sizes and weights of automobiles, and having a carrying capacity of 15,000 to 50,000 pounds.

Standard Welding Company.—Seamless steel rims for all types of wheels and rims are manufactured by the Standard Welding Company, Cleveland. Regular lines comprise standard clincher rims for wood or wire wheels to standard patterns used by all tire manufacturers; standard steel rims for single tube tires having crescent, drop center or flat base. In addition, any special rim can be made to blue prints and specifications. All rims are made true to circle, with properly flared edges, and are guaranteed against inherent defects. By the Standard Welding Company's methods absolute uniformity in circumferential measurement and perfection of tire set are assured.

CARBURETERS.

F. E. Bowers Company.—The Bowers carbureter, about to be put on the market by the F. E. Bowers Co., New Haven, is a new instrument of the float feed type, having one main and two supplementary air inlets. A constant level of gasoline is maintained by an annular metal float acting upon a needle valve by means of a trip. The distinguishing feature of the carbureter lies in the air supply. All air passing through the main inlet is thrown directly upon the spray nozzle, causing a uniform mixture. The base of the mixing chamber is a cone through the summit of which passes the spray nozzle. Over this cone is placed a copper funnel-shaped vessel, the base of which forms a cone fitting round the cone base of chamber, but leaving a space between the two. Air from the supplementary inlets is drawn up between the two cones and thrown directly through the gasoline spray; consequently the gas is completely formed before leaving the carbureter. The instrument is only made in one size, but to obtain a larger or smaller volume it is only necessary to change the copper double cone within the mixing chamber, an easy matter owing to it merely being carried by a flange, and make necessary nozzle and air adjustments. The throttle is of the revolving shuttle type giving a central draught at all openings.



Wheeler & Schebler.—In addition to their showing of the Schebler standard, Model "D" carbureter, which is made in seven sizes ranging from half inch to three inches, and which is adapted to fit any make of automobile or marine motor on the market, this concern has just uncovered a new type which is termed Model "E." This is a Schebler special type made with bottom air draft, the latter constituting the fixed air opening while the auxiliary opening is entirely closed when at rest, in distinction to the standard model in which the same inlet provides both the main and auxiliary air supply. The new model also differs in being equipped with an arrangement for taking hot air from the exhaust of the motor. The price of this carbureter is slightly higher than that of the standard. In addition this firm shows a balance throttle adapted to be fitted to any size of their carbureters, when using a governor, as well as a line of check valves for use in connection with two-cycle engines, these being also universally adaptable.

Byrne, Kingston & Co.—This concern exhibits a very complete line of carbureters adapted for all classes of work, automobile, stationary, and marine. The company has a large line of mufflers, either plain or fitted with cut-outs, adapted for all purposes.

Holley Bros. Company.—This company has a variety of carbureters, mostly of the central draft type. One of the specialties is a carbureter having the air intake at the top. This type is especially suited for marine work, where the carbureter must necessarily be placed low down.

The National Sales Corporation.—This concern is agent for the New Gaither Owen carbureter. The peculiarity of this device is that the intake pipe and mixing chamber is formed of a closed spiral spring which it is claimed tends to more thoroughly mix the gasoline vapor and air as well as form an automatic air valve.

The Heath Dry Gas Company.—This concern has perhaps the most striking novelty in the show, as its carbureter is without a float chamber, and depends solely on a suction valve to regulate the supply of gasoline between impulses. The strongest feature is a small fanwheel in conjunction with a coarse wire mesh, which it is claimed mixes and vaporizes the gasoline vapor much more thoroughly than is done in the ordinary form of carbureter.

GASOLINE AND OIL TANKS, PUMPS, ETC.

S. F. Bowser & Company.—With their gleaming metal trimmings and highly polished hardwood, the Bowser gasoline cabinets prove a potent attraction and seem better fitted to adorn a drawing room than a garage. The principal features of the exhibit are the Bowser combination cabinet, the Bowser long-distance outfit and the Bowser wheel tank. A booklet entitled "Just a Moment" has been prepared especially for distribution in connection with the exhibit and calls attention to the specialties shown.

National Oil Pump & Tank Company.—This firm displays a number of gasoline storing and pumping outfits for garages of all sizes, from its Little Hercules size up. Included in these is a long-distance outfit, a runabout tank and measuring pump outfit for garage service, to permit of the tank being taken to the car instead of the reverse, and the National automatic measuring power pump.

The Detroit Lubricator Company.—This concern shows the Hodges force feed oiler. This consists of a multiple feed individual pump type of oiler. They are supplied either self-contained or arranged with the sight feeds to be placed on the dash. The peculiarity of this device consists in having the delivery and suction valves positively operated by the operating shaft. It is an efficient oiler of the mechanical type now so generally favored by the majority of American builders of cars.

CHAINS.

National Sales Corporation.—This firm is the exclusive American representative for the Peugeot chains and rims which form the standard equipment of a number of the leading French machines. A full line of the various sizes and types in which these chains are manufactured is on display, in addition to the many other specialties controlled by this concern, such as coils, timers and other ignition accessories.

Diamond Chain & Manufacturing Co.—The products of this house are too well known to call for much description. The name diamond has been associated with the manufacture of chains so long that in this connection they are almost synonymous. Included among the extensive line of chains shown is a new series made of chrome nickel steel, rendering them extremely strong and light. In addition the Diamond I-beam front axle and hubs are displayed in a manner best adapted to show their numerous good points.

Baldwin Chain & Manufacturing Co.—In addition to the line of Baldwin block auto and machinery chains, as well as chains for motorcycle and bicycle use, this firm displays the Baldwin improved spring recoil check and the McKinney removable tire holder, a fixture for carrying spare tires. A full line of Baldwin roller chains, in both detachable and riveted types, is also shown.

Whitney Manufacturing Company.—Chains of every imaginable type form the bulk of this firm's display, including a number of forms specialized by them and with which their name is linked. Beside this array of power transmitters for every conceivable use, there is a complete showing of the Woodruff patent system of keying which has been adopted by a number of prominent automobile builders.

Charles E. Miller.—Brampton block and roller chains, considering the number of special sizes and types in which they are made, are a line of no mean proportions in themselves. They constitute one of the few, if not the only line of this kind brought from abroad and are shown in a variety of styles adapted to practically every car either made in this country or imported from abroad that uses the chain type of drive.

TOPS AND HOODS, ETC.

Sprague Umbrella Company.—No less than five different styles of auto fronts are displayed by this firm, whose name is inseparably connected with the making of tops. In addition a full sized top, covered with leather and lined with red English cravenette, is shown. Four of the fronts are steel and one solid pressed brass, all being enameled in different designs. Beside the above the new Sprague steel bows, adjustable hood and rubber bumpers are in evidence. The demand for the fronts is already large and preparations are being made to manufacture a large number of them.

Vehicle Apron & Hood Company.—Using the well-known "Blizzard" rubber cloth, this firm manufactures a complete line of tire and inner tube cases, tool rolls, top and lamp covers, auto buckets, caps with rain capes, auto shirts, sleeve protectors, dust hoods, auto robes and storm fronts, types of all of which are on view. They also show a non-skid tire band of rawhide and heavy steel rivets adapted to be laced to the tire.

PUMPS, JACKS, TOOLS, ETC.

Wray Pump & Register Company.—On the stand of this concern is to be found that greatest of essentials that should never be left behind but which is sometimes missing when most needed—the pump for inflating the tires. And as the correct pressure is more than half the battle in tire maintenance, the Wray line of pumps are also shown equipped with that very necessary addition, a compact air pressure gauge showing the result of laboring at the handle. As the work of pumping a large tire becomes very strenuous with the increase in pressure, it is usual to conclude that the tire is hard enough when a pressure gauge would show otherwise.

Duff Manufacturing Company.—Barrett jacks constitute the specialty displayed by this concern, and few autoists realize how much depends upon a good jack. One that makes raising the car difficult in order to remove a tire is a poor investment, and one that is apt to let down without any warning when an investigation is going on underneath the car is a menace. These jacks operate equally well at any angle and are guaranteed to be powerful enough to raise the heaviest car with but the exertion of one hand.

Cooks Railway Appliance Company.—This concern is the successor to the Merrill-Stevens Company, of Kalamazoo, Mich., for many years builders of standard jacks, and exhibits a line specially designed for automobile work, the essentials of light weight, great strength and general convenience and handiness, both in use and for stowing in the tool locker of the car having received attention.

Oliver Manufacturing Company.—Peerless jacks for touring cars, New Samson jacks for garages and Oliver's E-Z jacks for auto trucks, constitute the line specialized by this concern, a full assortment of each type being shown in an attractive manner at their stand.

Stevens & Co.—This concern show a general line of automobile and repair sundries, the specialty consisting of the Noonan line of tools. Somewhat of a novelty is the Noonan Valve remover and also a valve truer by the same maker.

The Utility Co.—Shows a miscellaneous line of sundries which includes the Utility spark plug, the Crackerjack jack, the Bullard wrench, and the famous hand cleaner, "Gre Solvent."

NON-SKIDS, TIRE COVERS, ETC.

Gilbert Manufacturing Co.—Gilbert automobile fabric supplies and the patented Gilbert spare tire case and adjustable tire holders of highly polished brass that have come into such general use of late form the exhibit of this concern, which, owing to the fact that it was a pioneer in the introduction of accessories of this nature, attract much favorable attention.

Hopewell Brothers.—This firm exhibits a line of goods comprising tire cases, tool bags, tube cases, sleeve protectors and vests, all of which are made from special automobile fabrics. Their tire case is a distinctive type similar to that placed on the market by them last year. The chief feature of the display is a white tire case encircling a bright mirror with the inscription "Admire yourself and the Hopewell" tire case.

Weed Chain Tire Grip Co.—This exhibit is unique in that it represents a showing that is not duplicated by any other in the building. "As necessary as gasoline" is the motto of the makers of this anti-skidding traction device, and when the autoist finds himself in a mud hole with the wheels slipping round helplessly he will agree with it. The same concern expected to be in a position to show a new traction device for commercial vehicles, which, however, was not ready.

Allen Auto Specialty Company.—Allen's tire covers and Allen's polished bronze detachable tire holders are the features of this firm's exhibit. The tire covers are of special material—that is, water, oil and dirt-proof—and are equipped with glove fasteners which permit of putting them on or taking them off in a few moments.

MUFFLERS, CUT-OUTS, ETC.

Byrne, Kingston & Company.—In addition to its numerous other specialties, this firm displays a complete line of Kingston mufflers for both automobile and marine use in a number of varying types, plain or combined with cut-outs, and in sizes adapted to engines of all powers.

Gray-Hawley Manufacturing Co.—Automobile and marine mufflers built on the special lines evolved by this concern form the bulk of its display, which also includes a number of other specialties designed for automobile use, such as air, steam and hand pumps, valves, cut-outs and the like.

DEATH OF A PIONEER QUAKER AUTOIST.

PHILADELPHIA, Jan. 13.—Something of a shock was given local automobile trade circles on Saturday morning, when the sudden death of William Morgan, a pioneer in the industry, was announced. In 1899, in company with Louis, John, Thomas and James Clark, he organized the Autocar Company, and established a factory at Ardmore, serving as secretary and general manager until 1904, when he sold his interests to the Clarks. Later he accepted the managership of the Philadelphia Locomobile branch.

NEWS AND TRADE MISCELLANY.

Two thousand skilled workmen are now employed by the Cadillac Motor Car Company, of Detroit. Within a short time the daily product of the company will reach more than fifty cars.

The Tincher Motor Car Company, of Chicago, which has contemplated the establishment of a factory at South Bend, Ind., has been absorbed by the Studebaker Automobile Company, South Bend.

In "The Vanderbilt Cup," which is being produced at the New York Theater with Elsie Janis as the star, are seen four S. & M. Simplex cars. Two of the cars are of the racing type and two are touring cars, 1907 models. One of the Simplex racing cars wins the race nightly, carrying the hero as driver.

Raleigh, N. C., is to have an automobile factory. The Dixie Motor Company, of High Point, one of the suburbs, has been incorporated with a capital stock of $125,000 to manufacture and sell automobiles, bicycles and all parts and accessories thereof. The incorporators are E. W. Van Brunt, C. L. Dutton and H. A. Megnaw, all of High Point, N. C.

The success of the tire and tire repair exhibition of the Minneapolis Automobile Club has induced that body to prepare a series of similar exhibits and demonstrations during the winter months. W. C. Crafts, of the National Tire Repairing Company, of St. Paul, recently demonstrated some new methods in tire repair and gave a short lecture on tire rebuilding.

W. B. Hurlbut, New York, manager of the Packard Motor Car Company, who lately returned from Europe, states that New York is far ahead of Paris in many ways as an automobile center. He says that of the garages in Paris will hardly show the same floor space as any one of a half dozen New York garages. The streets of Paris are not so crowded as New York with automobiles and commercial vehicles are not nearly as numerous as in New York.

On December 26, 1906, the corporate name of Cook Railway Appliance Company, of Kalamazoo, Mich., was changed to Cook's Standard Tool Company. The ownership and management remain the same. The principal reason for the change of name was that the name "Standard," by which the company's tools and appliances had long been known to the trade, had become such an important asset to the business that it was deemed advisable to protect it by its incorporation into the company's title.

The entire business of the Lozier Engine Mfg. Co., Buffalo, N. Y., has been taken over by the Du Bois Iron Works, Du Bois, Pa., a $1,000,000 corporation. While retaining the same general appearance, numerous improvements will be made on Du Bois engines; the manufacture of the Simplex steam pump will be continued. Officers of the company are John E. Du Bois, president; W. C. Pentz, vice-president; E. A. Badger, secretary and treasurer; I. N. Hamilton, general manager; C. E. Stuart, sales and advertising manager.

W. A. Rutz will represent the Continental Caoutchouc Company at the Ormond-Daytona races next week. He will have with him a large stock of tires for emergency equipment of racing cars, and in addition will also have tires suitable for touring cars that will be immediately available for automobilists desiring them. The Continental company announces that for the convenience of any owner tires will be provided at Ormond of the size and style required by the car. provided advance information is filed with the New York headquarters of the company at 43 Warren street.

In the matter of the interference that has been pending before the Patent Examiner in the case of the Premier Motor Mfg. Co. vs. B. A. Gramm, vice-president and general manager of the Logan Construction Company, regarding the proprietary right to a trademark for motor vehicles, involving the use of the words "car" and "quality" in various combinations, a decision has just been handed down in favor of the defendant. The priority of claim is based more particularly on such phrases as "the quality car;" "the car of quality," and "that car of quality."

RECENT TRADE REMOVALS.

The Cartercar Company, of Philadelphia, has removed from the Aldine garage to 1519 Belmont avenue.

J. L. Keir, agent for the Renault car and Michelin tires in Philadelphia, will remove to 310 North Broad street in the immediate future.

R. W. Cook & Company, Chicago representative of the Royal Tourist, have taken possession of their new salesroom at 1251 Michigan avenue.

The Detroit Motor Car & Supply Company has leased the store and basement at 230 Broadway, New York City, for a term of years for a salesroom and garage.

The Auto Supply Company, formerly located in the Park Square Automobile Station, Boston, has removed to 14 Columbus avenue, in the motor mart. Manager Samuel Ascher states that the company's rapidly increasing business demanded increased facilities. The new store is one of the best located in the mart.

The George N. Pierce Company, of Buffalo, makes the announcement that the factory and offices of the company have been removed from No. 18 Hanover street to the new factory, No. 1695 Elmwood avenue. All mail for the purchasing and manufacturing department should be addressed to the new location. The new Pierce factory stands on the site of the old Pan-American midway.

NEW AGENCIES ESTABLISHED.

The Autocar Company, of Ardmore, Pa., has placed the agency for the Autocar for Camden, N. J., with C. C. Albertson, of that city.

Fraser & Reynolds, proprietors of the Rittenhouse garage, South Twenty-third street, Philadelphia, will handle the Wayne line in that city during the coming season.

The Northwestern Motor Car Company, of Philadelphia, which is temporarily located at 1943 North Woodcock street, has taken the agency for the Moline car for that city.

Thomas M. Twining, 210 North Broad street, Philadelphia, has closed a contract with the Crawford Automobile Company, of Hagerstown, Md., to handle the Crawford line.

Charles F. Hellom & Company, makers of Invader oils, have opened two branch houses, one in New York City, at 715 Seventh avenue, and the other in Philadelphia, at 648 North Broad street.

R. M. Jones and F. O. Holden are about to take over the Reo agency at the old Jefferson avenue stand, Detroit. The stand has been thoroughly overhauled and is now one of the brightest on the row.

An agency has been established by the Columbus Buggy Company, of Columbus, Ohio, for the handling of their line of electric vehicles, with Maxwell-Briscoe Chase Company, 1407 Michigan avenue, Chicago.

The Cleveland Motor Company has established a branch in Chicago at 1470 Michigan avenue, where they will share a fine salesroom and garage with the Bird Sykes Company. Richard Bacon, Jr., will manage the branch.

The announcement that the Auto Selling and Repair Company had taken up the agency for the Dragon for Minnesota was premature. The Dragon is considering several parties, and decision will be announced shortly.

From Minneapolis comes the news that the St. Louis car agency has been placed with the Auto Selling and Repair Company. The Oldsmobile agency has changed from the Barclay Auto Company to F. G. Winston, Jr., who handled the Olds line in 1905.

Detroit will soon have another automobile selling agency under the title of the Motor Sales Company. The old Northern stand, at 251 Jefferson avenue, has been secured as a garage. The firm will handle De Luxe and Queen cars and is also looking for a light runabout or electric.

Walter C. Martin, proprietor of the Cadillac Company, of New York, Broadway and Sixty-second street, has taken up the agency for the Rolls-Royce automobile, one of the best-known English machines. The Rolls-Royce Import Company will import the chassis only, the bodies being fitted in this country.

Another high-class garage has been added to the long list on Jefferson avenue, Detroit. The company, which is known as the Fee Vincent, is located between Antoine and Hastings, in the heart of the automobile center. Electric vehicles only are handled, the agency having been secured for Woods electric automobiles.

The Dragon Automobile Company, of Philadelphia, announces representation for the Dominion of Canada with the International Automobile Company, Ltd., of Montreal, being done entirely through correspondence and photographs. In the same manner three sample orders were received from different firms in Mexico.

The Western Rubber and Supply Company will handle G & J tires in Southern California, with headquarters at 1010 South Main street, Los Angeles. The company has been incorporated with the following stockholders: R. T. Brian, Guy M. West, H. H. West, C. A. Davis, R. G. Tryon, Thomas McCafferty and W. C. Brian. Guy M. West will act as manager.

The Franco-American Auto and Supply Company, of Chicago, has been appointed sole agent and distributer in all territory west of Buffalo, N. Y., and Pittsburg, Pa., for E. Lamberjack & Co., for Michelin tires, and Leon Rubay, of New York. The company will carry exclusively the Bell pressure pump, Look storage battery, L. & M. tire irons, Alden Speares Sons' cylinder oil, besides all the supplies handled by Leon Rubay, of New York, and E. Lamberjack & Co.'s full line of Michelin tires, round, flat, anti-skid or Samsonized Michelins.

PERSONAL TRADE MENTION.

L. E. Horton has been appointed manager of the Northwestern Cadillac Automobile Company, with headquarters at Minneapolis, Minn.

Joseph Tracy, the well-known automobile driver, has been retained by the Craig-Toledo Motor Company as consulting engineer. Mr. Tracy will shortly be seen driving the new Craig-Toledo roadster, which he will no doubt enter in some of the most important spring and summer events in the East.

Louis Chevrolet, at one time the champion among automobile drivers in America, has entered the employ of the Autocar Company and is at present undergoing a thorough course of instruction in Autocar work at the Ardmore factory. Later Mr. Chevrolet will be connected with the New York Autocar agency at Broadway and Eightieth street.

John L. Poole, who for some weeks has been visiting the several factories of the Buick Company, at Flint and Jackson, will shortly leave New York to take up the management of the company's foreign sales department. Agencies will be established in all European countries. Mr. Poole's headquarters will be in Paris, France, care of the American Express Company.

T. F. Byrne has been appointed manager of the Chicago branch of the H. H. Franklin Manufacturing Company. Mr. Byrne is a veteran in the automobile and bicycle business. He was formerly purchasing agent for E. C. Stearns & Co., of Syracuse, and later became secretary of the Stearns Canadian company, finally going to Australia as manager for the Canada Cycle & Motor Company.

Howard M. Post has accepted the position of advertising manager with the Quincy, Manchester, Sargent Company, manufacturers of railroad appliances, who have offices in Chicago and New York, with factories at Chicago Heights, Ill., Milwaukee, Wis., and Plainfield, N. J. Mr. Post originally fitted himself for a telephone engineer and held a position as telephone switchboard installer with the Western Electric Company, of Chicago.

Frank P. Libbey, the Salt Lake City representative of the Lozier Motor Company, has formed a connection with the Consolidated Wagon & Machine Company, of Salt Lake, and the Lozier will hereafter be represented in the intermountain district by this concern, which has branch houses throughout Utah and Idaho. The company is one of the solid financial institutions of Salt Lake, the directorate being composed of many high officials of the Mormon Church, who have shown a keen interest in automobiles for some time past.

NEW TRADE PUBLICATIONS.

Hooper Bros. & Darlington, Westchester, Pa., have sent out a 1907 tear-off calendar on which they present their fine wagon and carriage wheels and announce their different types of wood hub wheels.

An interesting booklet is just to hand from the National Carbon Company, Cleveland, Ohio, on "How to adjust a spark coil." Instructions are complete and concise, and doubtless numberless automobilists will be glad to avail themselves of the offer of the company to send a free copy on request.

"A little book which tells in narrative style the story of its conception and perfection," is the appropriate introduction to the booklet issued by the Craig-Toledo Motor Co., Toledo, Ohio. It is interesting reading and tells the various experiences which the Craig-Toledo car went through before it was considered good enough to put before the public.

Information likely to be of use to other than the automobile novice is contained in the brochure issued by the Albert Champion Company on Gianoli high-tension magnetos. A detailed and illustrated description of the magneto is given, followed by a treatise on adjustment and care of the ignition system, and useful hints on how to remedy minor defects.

A complete description, with numerous illustrations, of the Hawthorne Works, of the Western Electric Company, is given in the booklet just issued by that firm. External views of the works and a series of half-tones of the machine shops give some idea of the magnitude of the Western Electric Company's equipment.

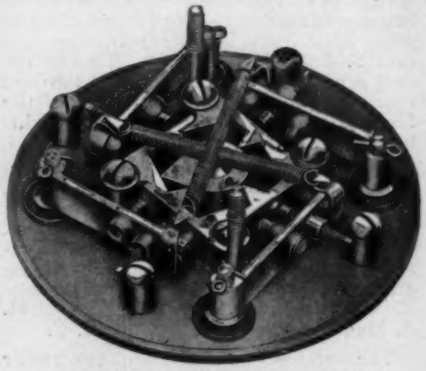
Attractively presented in blue and gold, the catalogue of the Mayo Radiator Company, of New Haven, Conn., gives illustrations of the various types of radiators produced by that firm for the 1907 season. The line is a complete one, and amongst the radiators presented are those of several important American automobile firms regularly fitted with the Mayo product.

The National Sales Corporation, 296 Broadway, New York, has prepared a sheet of electros for the use of jobbers, illustrating Connecticut coils, "Soot-Proof" plugs, Royal batteries, Peugeot chains and rims, "P. D. Q." tire repair plugs, etc. The cuts are made in several sizes in order to meet the requirements of the different jobbers who may issue a large or small catalogue.

Patterson, Gottried & Hunter, Limited, of 146-150 Centre street, New York City, have issued a new catalogue to meet a persistent demand on the part of automobilists needing tools and supplies. Articles of interest only to jobbers or blacksmiths have been kept out of the new publication, but all tools likely to be needed by the private automobilist or the garage proprietor are described by text and cuts and are priced.

A most attractive catalogue is that of the 1907 Columbia gasoline cars, which is now being distributed by the Electric Vehicle Company. It is a book of forty pages, bound in an exceedingly handsome cover done in gold tracery. The catalogue is printed throughout in two colors and contains beautifully executed half-tones of the separate models and their component parts. One of the most striking features is an "X-ray," or shadowgraph, reproduction of the 24-28-horsepower touring car. This reproduction is 18 by 12 inches in size and is folded into the center of the book.

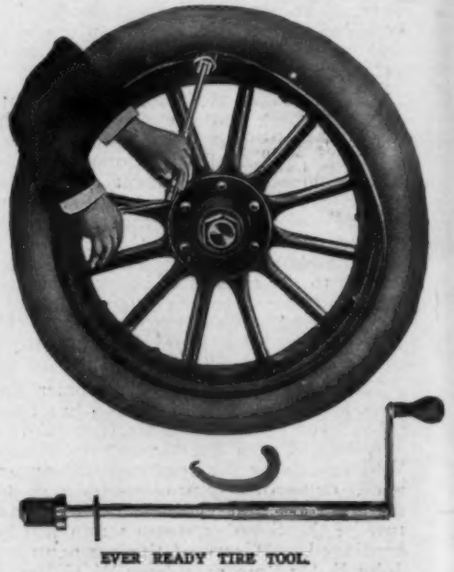
Climax Electrical Commutator.—Ignition defects are probably responsible for nine-tenths of the troubles experienced by automobilists. To remedy this A. B. Black, 21 South Market street, Boston, Mass., has produced a new timer, known as the Climax Electrical Commutator, which it is claimed will



CLIMAX ELECTRICAL COMMUTATOR.

give perfectly synchronized ignition. Each cylinder gets its spark at the exact point, keeping them in perfect time, making each do the same amount of work, no matter whether there are two, four or six cylinders, and when once adjusted needs no further attention.

A Useful Tire Tool.—To overcome the difficulties experienced in mounting and removing clincher tires, a useful tool known as the "Ever Ready," handled by the Auto Improvement Co., 316 Hudson street, New York, has just been brought out. With this instrument



EVER READY TIRE TOOL.

tire removal presents no more difficulty than does the cranking of the engine. The tool is readily inserted under the outer shoe, without any danger of injuring the inner tube, and the tire removed by an easy rotary motion. In two minutes the tire can be removed or put on.